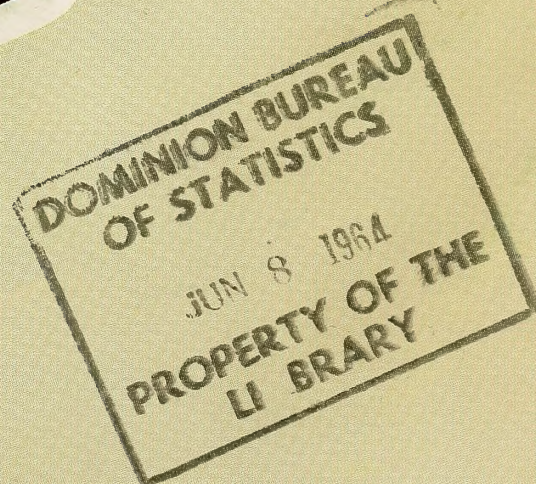


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# ALBERTA

## INDUSTRY and RESOURCES

1964



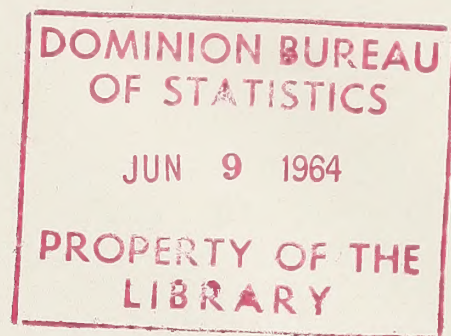
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# ALBERTA

# INDUSTRY and RESOURCES

## 1964

PREPARED BY  
THE ALBERTA BUREAU OF STATISTICS

Published by authority of  
HONOURABLE A. R. PATRICK  
Minister of Industry and Development

EDMONTON, ALBERTA









EDMONTON - Alberta,  
March, 1964.

A new spirit of confidence in Canada's future is manifest in our industrial leaders. It is a confidence born of success and progress. The term "Made in Canada" has become synonymous with quality and performance. Canadians have come to realize that support of Canadian industries leads to further develop-

ments and offers the best assurance of general prosperity. Canadian made products are winning ever wider acceptance in export markets.

Alberta has had a leading role in Canada's economic growth of the last two decades. The Alberta economy has been growing and diversifying faster than that of any other section of Canada. We are confident that we shall maintain that leadership.

Alberta Government policy is to assist and encourage industrial growth by providing an economic climate in which business can operate with profit.

You are invited to investigate Alberta industrial opportunities.

A handwritten signature in dark ink, reading "A. R. Patrick". The signature is written in a cursive, flowing style.

Hon. A. R. Patrick, Minister,  
Department of Industry and Development.



## FOREWORD

Alberta industrial growth has been so rapid and diversified in the past two decades that periodic benchmarks are useful to executives of firms, to economists, and to government officials in assessing likely lines of further progress. In this book are assembled key data on the major economic sectors of the province.

Alberta industrial growth is but an integral part of the industrial development of western Canada. Economic progress in one province is of benefit to neighbouring provinces by providing larger and more stable markets. In assessing industrial opportunities, the whole western Canadian market should be considered as one unit. This market comprises five million persons with a gross manufacturing output of \$4.5 billion; mineral output of \$1.4 billion; a volume of construction totalling \$2.6 billion; and a farm cash income of over \$1 billion.

Alberta for two decades has been the pace setter in economic development.

The assistance, direct and indirect, of the following individuals and organizations is gratefully acknowledged: I. H. Anderson, Water Resources Branch, Department of Agriculture; R. E. English, Statistician, Farm Economics Branch, Department of Agriculture; Dr. G. T. S. Govett, Research Council of Alberta; R. Loomis, Superintendent of Forest Management Branch, Department of Lands and Forests; J. G. MacGregor, Chairman, Alberta Power Commission; L. B. Speelman, Statistician, Department of Mines and Minerals; J. Telford, Chief Rate Clerk, Alberta Freight Bureau; The Industrial Commissioners of Alberta Cities and W. Bogdan, Cartographer, Surveys Branch, Department of Highways.

For much of the historical and for the census data we are indebted to publications of the Dominion Bureau of Statistics.

Edmonton - Alberta,  
March, 1964.

DEPARTMENT OF INDUSTRY AND DEVELOPMENT  
ALBERTA BUREAU OF STATISTICS

D. I. ISTVANFFY - DIRECTOR



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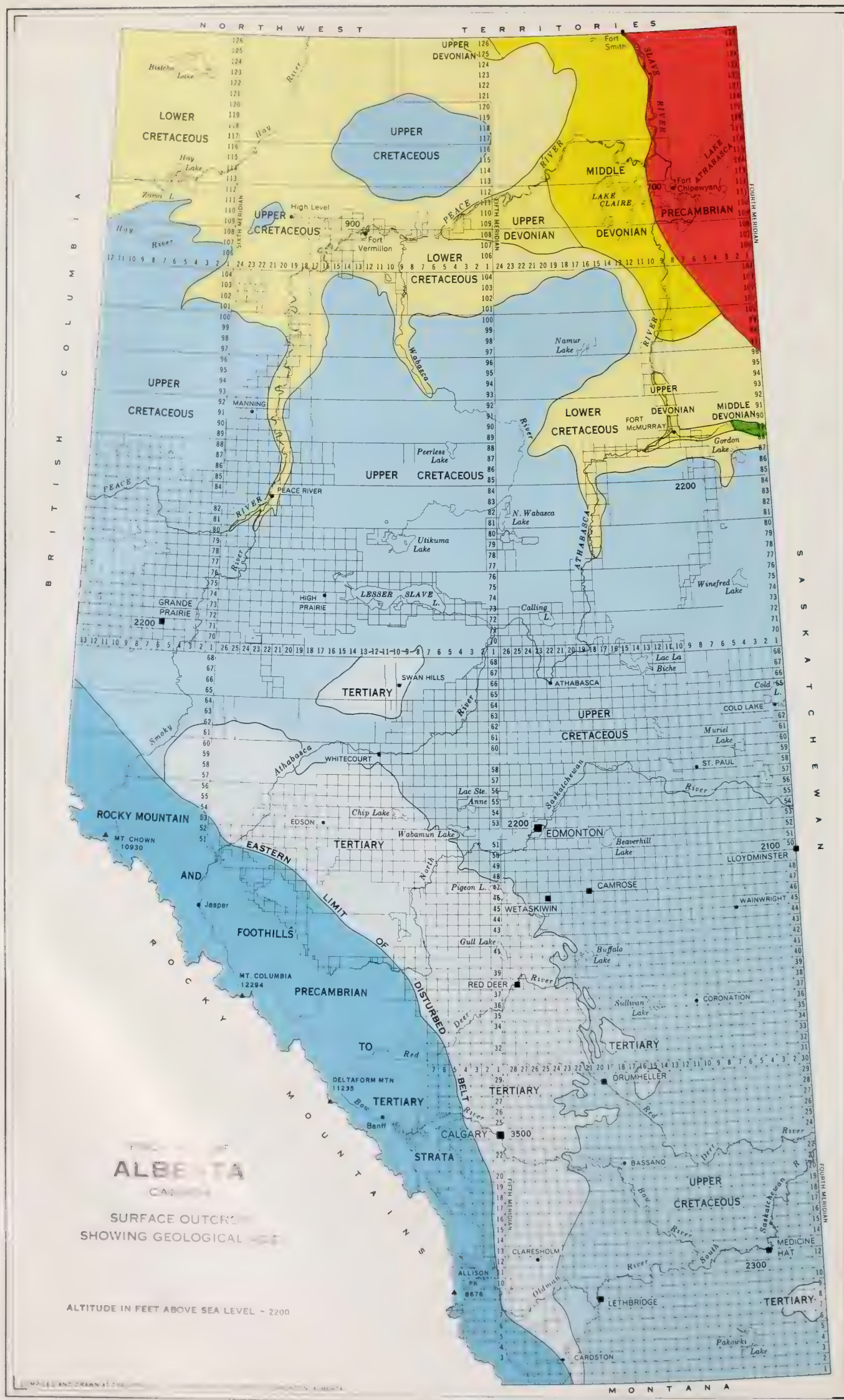
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# GEOGRAPHY

Alberta is a plateau 255,285 square miles in extent, 248,000 square miles being land and the balance fresh water. The province extends 756 miles from north to south and varies from 182 to 404 miles east and west.

Alberta may be divided roughly into three grand divisions which shade one into the other. The northern division comprises the northern half of the province. This is a region of great rivers, lakes, and forests broken by tracts of open prairie like the Grande Prairie district and the wide sweeping terraces of the Peace River Valley. Three river systems, the Athabasca, Peace and Hay drain this area. The Hay River drains north into Great Slave Lake. The Athabasca and Peace River systems drain in a northeasterly direction into the basin of Lake Athabasca. This in turn is emptied by the Slave River northward into Great Slave Lake, the source of the MacKenzie River.

The central division is mostly a park-like country. A succession of wide ridges and broad valleys, freely interspersed with lakes and streams and covered with belts of timber give the landscape a pleasing and hospitable appearance. Drainage is by the North Saskatchewan River with its numerous tributaries.

The southern division, which starts about 200 miles north of the international boundary, is a treeless, rolling prairie. It was once covered naturally with short grass. Drainage is by the St. Mary's, Bow and Red Deer rivers.

The Canadian Shield of precambrian rock in the northeast, covers about three per cent of Alberta. This area is abundantly watered by lakes and rivers and is generally of low relief.

There are five practicable passes to the Pacific through the Alberta section of the Rocky Mountains. The lowest pass (The Yellowhead Pass) is 3,700 feet and the highest pass (The Kicking Horse Pass) is 5,400 feet above sea level.

The Columbia Ice Field lies astride the British Columbia - Alberta boundary at the division between Banff and Jasper National Parks. Melting waters of the ice field flow north to the Arctic Ocean, west to the Pacific Ocean and east to Hudson's Bay.

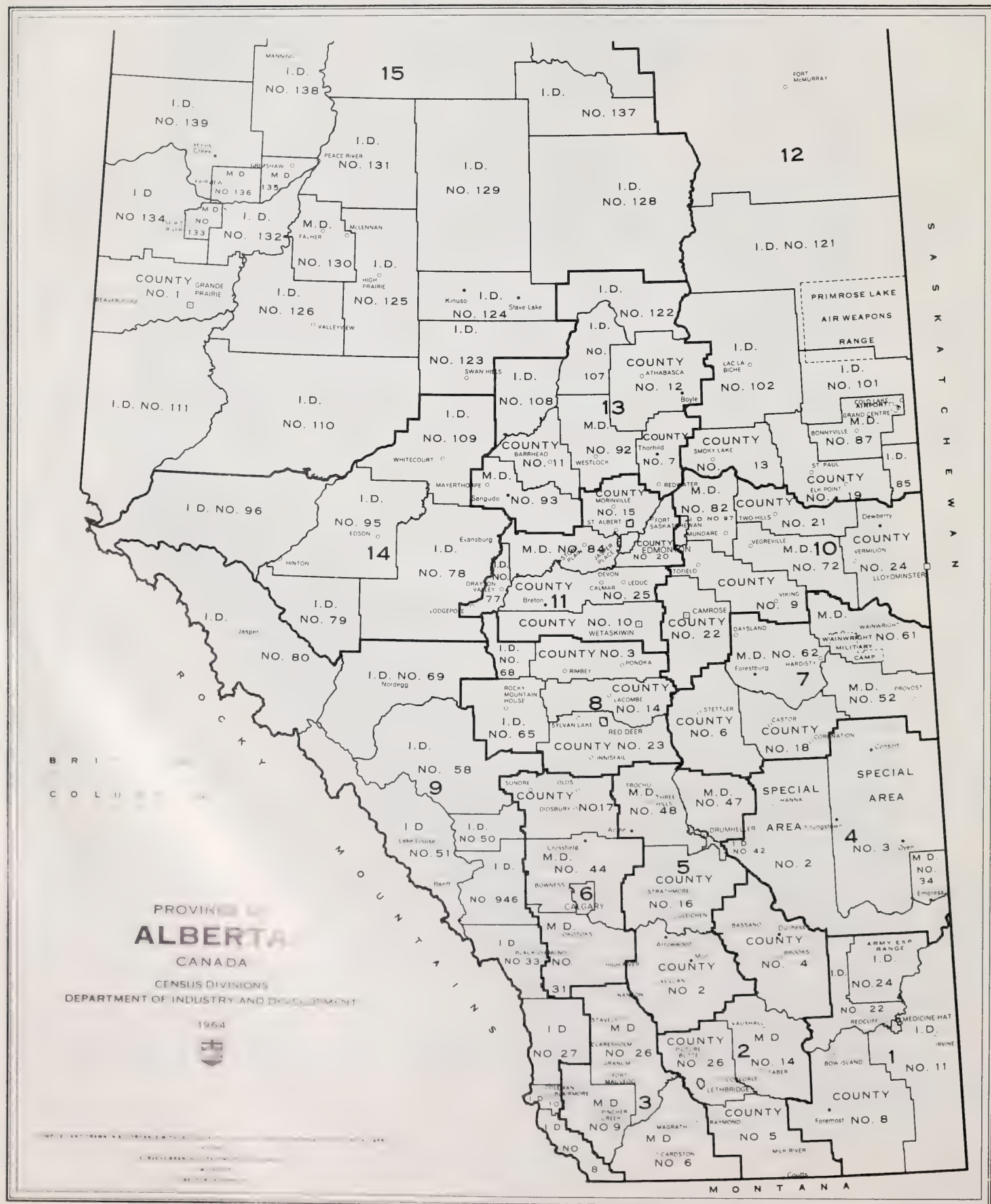
About 85 miles to the north and east of Calgary, from Drumheller to Princess, the Red Deer River has cut out a mile wide valley to a depth of nearly 400 feet below the surrounding prairie. This valley is the "badlands". In addition to their weird topography, the badlands are a veritable storehouse of fossils.

Tilting downward from the southwest corner to the north and east, the Alberta plain shows the work of the last glacial period. The rate of slope of the Alberta plain is usually from ten to twenty feet per mile, but the relief is highly varied locally. Ice covered the whole plain except the Cypress Hills in the southeast corner of the province. The unglaciated surface of the Cypress Hills has been sharply cut by streams flowing north and south.

Dried-up river beds and deeply incised river valleys are marked features in Alberta. The Peace River has worn a spectacular wide and deep valley, near the town of Peace River.



Alberta has the most varied landscape of any Canadian province. Contributing to this variety are the snow-capped mountains and the rolling foothills, the hospitable parklands and the expansive prairies, the rocky Canadian Shield and the abundant forests.





# CLIMATE

Alberta is the sunniest province of Canada. Annual total hours of bright sunshine average 2000 to more than 2200 hours through almost all of the province. Summer temperatures are pleasant and desirably warm. Low humidity results in the absence of the discomfort which summer heat causes in major centres in other parts of the continent. Clear skies make summer nights pleasantly cool. In winter, though the temperature occasionally drops to low levels, the cold is alleviated by bright sunshine and low humidity.

The natural vegetation regions serve as an indication of the general climatic areas in Alberta. In the south the prairie grassland is a semi-arid area with hot summers and comparatively mild winters. Surrounding the grasslands are the parklands. Precipitation is usually more reliable in the parklands and winters somewhat colder. Northward from the parkland are the northern forests. Summers are normally warm for the latitude, but winters are usually long and intensely cold.

Rainfall is adequate over all of Alberta except in the southeast area of the province. The problem of aridity has been solved satisfactorily in many parts of this region by irrigation. Fortunately the seasonal pattern of precipitation favours the farmer. Over most of Alberta about 50 per cent of the year's precipitation normally falls as rain in the April to July period -- the growing season.

The length of the growing season is particularly important in Alberta. Throughout the greater part of the grain area the average frost-free period ranges from 80 to 120 days. Eighty days is critically close to the minimum required for grain crops to reach maturity.

Only about one-quarter of annual precipitation falls as snow. It may fall in any month, although measurable snow is very unusual in June, July and August. Snow cover usually appears in late October and disappears in early April. Alberta's average annual snowfall is only about half that experienced in the populated parts of Quebec, Ontario, the Maritime Provinces, and the upland section of British Columbia.

One disadvantage of extreme winter temperatures combined with light snow cover is relatively deep frost penetration. In those severe winters when there is no snow cover, frost penetration may reach as much as thirteen feet in gravels.

The character of the winter period is variable from year to year and is dependent upon the path and direction of the air flowing through the Polar regions and the amount of pre-cooling which it has undergone before reaching the province. A steady flow of very cold air crossing the Polar regions into Alberta may last several weeks. On the other hand, the cold wave may pass quickly southeastward to be replaced by a flow of much milder air from the west or southwest. This warm wind is known as a "Chinook".

A "Chinook" can raise midwinter temperatures from bitter cold to well above freezing in the space of a few hours — an experience never to be forgotten. The Chinook is most pronounced in southern Alberta, but if the Pacific air spreads over the whole of the prairies a milder spell is produced also in the Edmonton area.



"Degree-days", (a term obtained by assigning to any day a value equal to the number of degrees by which the mean temperature falls below 65°F.), is often used by engineers to measure heating requirements. Using this standard, heating requirements are not exceptionally high. Degree-days per year rise from 8000 to 9000 in southwest Alberta to 15,000 in the northeast corner. Fuel needs in the main settled area are above those of British Columbia, but below those of Saskatchewan and Manitoba. Fuel costs are much lower than in any other province. Southern Alberta figures for fuel needs are comparable with those for southwest Quebec and eastern Ontario.

An indication of the suitability of Alberta's climate for agriculture is the fact that permanent agricultural settlement reaches its farthest northern point in Canada in the Peace River district. The favourable combination of long hours of sunlight, a sufficient number of frost-free days and adequate precipitation permit this situation.

Considering the extent of Alberta and its geographical location, variability of climate, in different areas of the province, is to be expected. The mountains form a fairly effective barrier to the maritime influence of the Pacific and at the same time leave the area exposed to the inflow of cold Arctic air masses. Lacking this maritime influence from the west, there results a wide range of temperatures between the warmest and coldest months in Alberta. The range varies from about 45° in the southwest to 75° and 80° in the far northern sections of the province.



*This modern refinery at Innisfail processes Alberta oil for Canadian markets.*



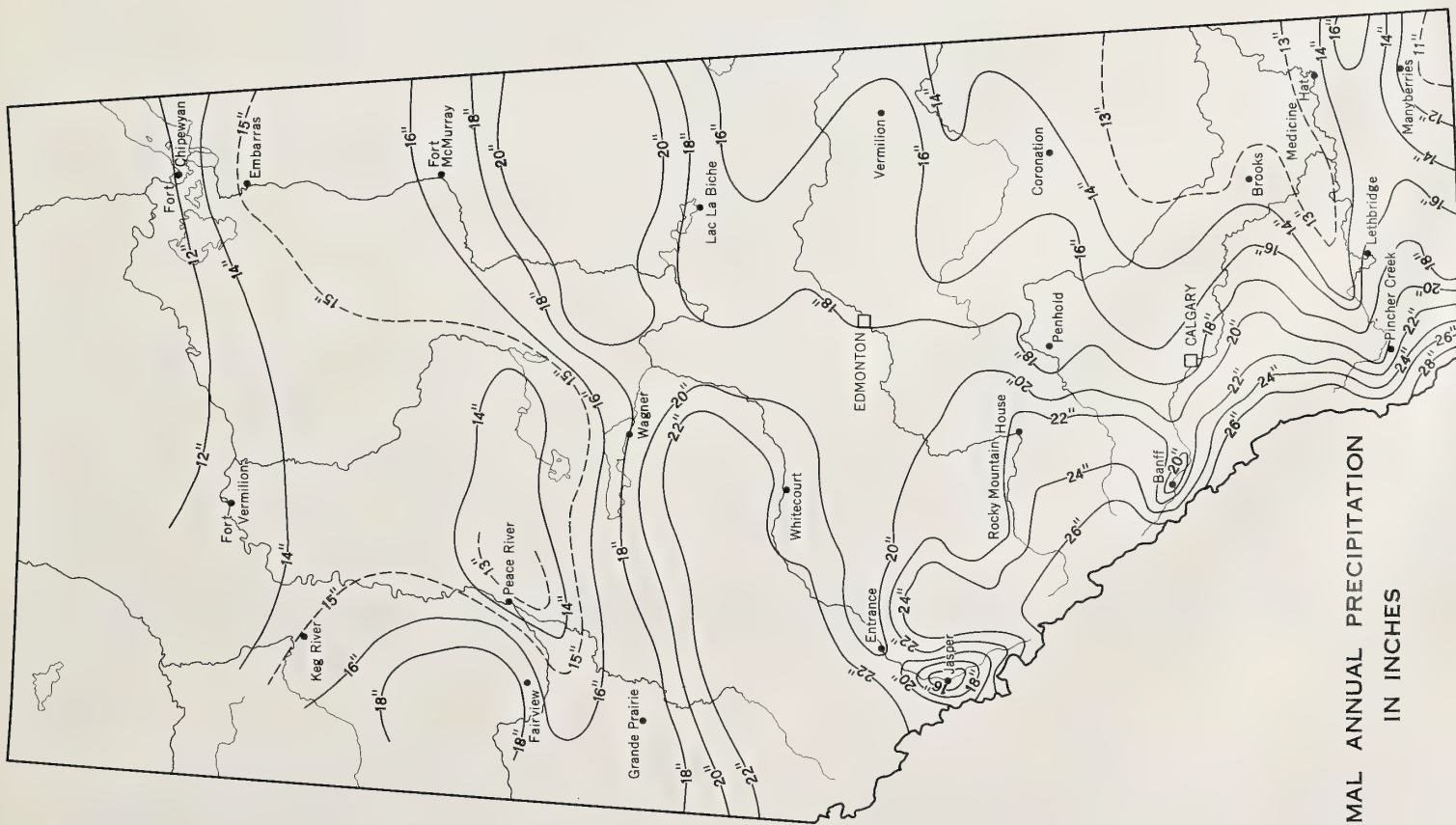
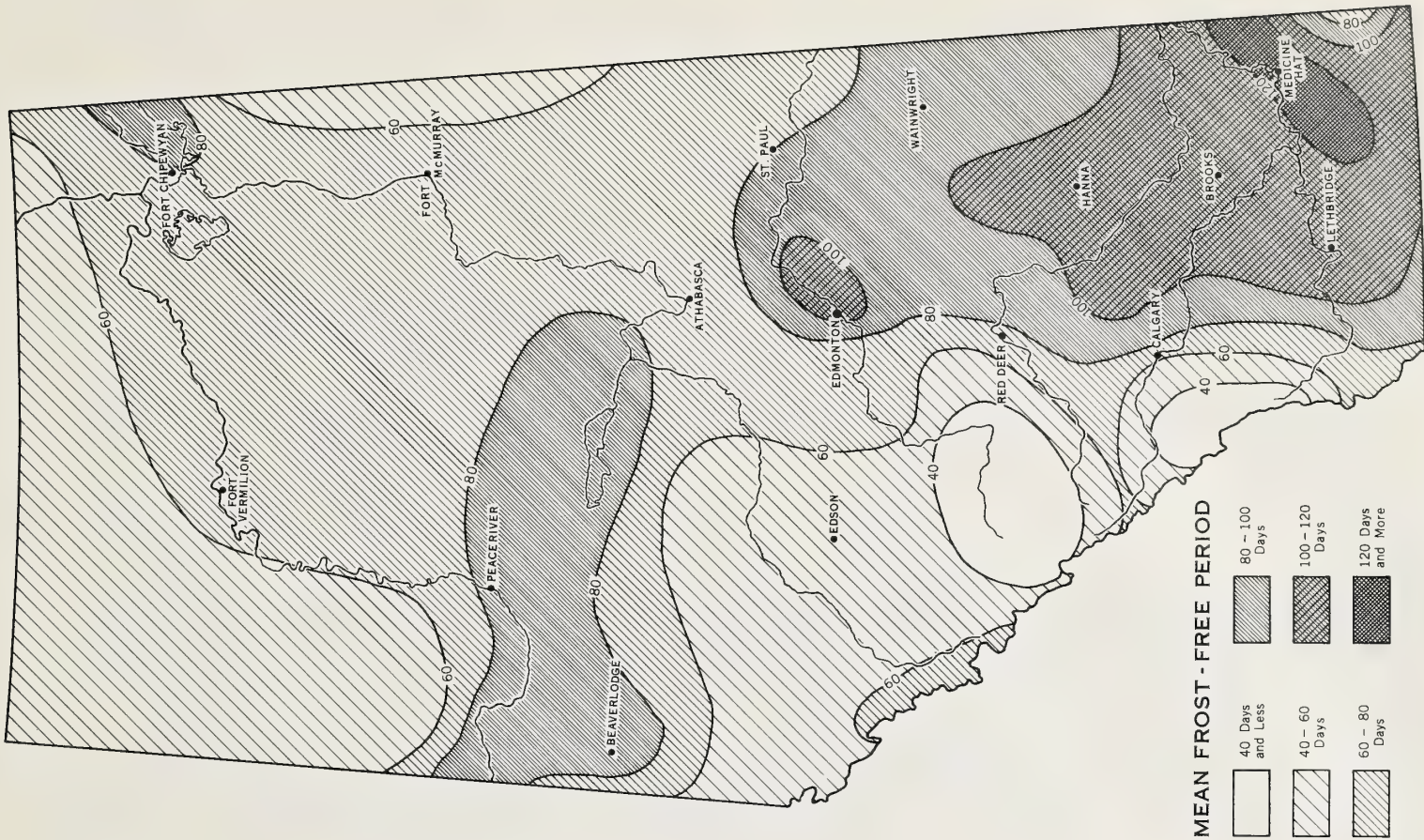




TABLE 3. STANDARD 30-YEAR (1921-1950) NORMALS OF TEMPERATURE, PRECIPITATION, AND FROST DATA - ALBERTA WEATHER STATIONS

Station	Elev. (Feet)	Lowest (Feet)	Highest (Feet)	No. Days	July Mean Daily		Mean Annual Precip.	Mean Annual Snowfall	Mean Monthly Total Precip.				First Date	Year Ending	Period (Years)			
					Max.	Min.			April	May	June	July			Collection	Year	First Date	Last Date
1 Alex	2385	-64	104	21	-5	79	17.70	54.8	1.03	1.57	2.73	2.53	Mar. 24	June	43	12	724	1
2 Asseck	2300	-71	98	2	-7	81	12.56	36.7	1.00	1.30	1.88	1.99	-	June	-	-	-	2
3 Astoria	4350	-47	100	2	4	74	17.20	55.9	0.92	2.02	2.56	1.61	Aug. 23	June 24	22	60	100	3
4 Athol	1900	-77	100	24	-9	77	17.38	58.0	0.75	1.75	2.52	2.87	Aug. 17	June 19	29	38	100	4
5 Bar	483	-77	100	22	4	73	17.95	73.5	1.12	1.65	2.59	1.61	Aug. 16	June 4	54	54	100	5
6 Bonanza	2000	-77	100	25	3	81	12.53	37.3	1.43	1.70	2.06	1.82	Sept. 12	May 20	19	121	136	6
7 Bonanza	2000	-77	100	18	1	73	17.32	68.2	0.87	1.50	2.01	2.31	Sept. 1	May 30	38	44	149	7
8 Bonanza	2000	-77	100	10	-	-	22.91	118.3	1.77	2.40	3.50	1.42	Aug. 10	June 16	16	75	100	8
9 Bonanza	2000	-77	100	10	-10	76	14.62	49.2	0.66	1.19	2.36	2.19	Aug. 28	June 1	2	30	100	9
10 Bonanza	2000	-77	100	-	-	71	-	-	-	2.45	3.70	4.39	Sept. 7	May 27	8	103	132	10
11 Bonanza	2000	-77	100	21	-1	83	-	-	-	-	-	-	Sept. 19	May 22	34	121	151	11
12 Bonanza	2000	-64	98	2	-13	74	14.61	47.4	0.60	1.71	1.68	2.28	Aug. 25	June 13	17	73	91	12
13 Bonanza	2000	-77	100	2	-	-	11.47	23.3	0.80	1.20	2.26	2.37	-	-	-	-	-	13
14 Bonanza	3540	-46	97	26	5	76	17.47	57.0	1.26	1.94	3.48	2.41	Sept. 3	June 3	46	92	127	14
15 Bonanza	2200	-57	98	13	-5	75	18.27	49.9	1.20	2.04	3.05	3.13	Aug. 27	June 8	35	80	138	15
16 Bonanza	2200	-61	100	17	-5	75	18.00	49.8	0.97	1.95	2.85	3.50	Aug. 22	June 18	38	65	94	16
17 Bonanza	2215	-58	101	15	-7	77	15.06	41.4	1.08	1.64	2.25	2.67	Sept. 5	June 5	20	103	135	17
18 Bonanza	3826	-43	102	28	10	79	17.68	60.6	1.14	2.33	3.52	1.69	Sept. 10	May 30	35	103	150	18
19 Bonanza	3425	-	91	-	-	72	-	-	-	2.22	3.69	4.95	Sept. 1	May 23	8	101	131	19
20 Bonanza	4000	-	-	-	-	-	18.84	83.0	1.51	2.07	3.14	1.94	Sept. 4	June 7	32	89	149	20
21 Bonanza	3395	-	-	-	-	-	14.04	58.5	0.94	1.46	2.16	1.42	Sept. 3	June 1	17	94	123	21
22 Bonanza	3390	-	-	-	-	-	17.32	54.8	1.12	1.83	3.89	2.23	July 19	July 13	17	6	-	22
23 Bonanza	3850	-59	93	21	-6	69	24.39	104.8	1.90	1.95	3.39	3.13	-	-	-	-	-	23
24 Bonanza	4312	-	96	17	-	-	19.73	79.8	1.42	1.93	2.76	1.51	-	-	-	-	-	24
25 Bonanza	2618	-48	96	17	-5	79	14.29	41.3	1.03	1.19	2.15	2.60	Sept. 3	June 1	24	94	137	25
26 Bonanza	3920	-47	99	28	5	78	18.98	77.3	1.06	2.50	3.56	1.60	Aug. 29	June 9	12	81	136	26
27 Bonanza	2255	-	105	-	-	82	-	-	0.77	1.36	2.38	2.24	Sept. 10	May 23	17	110	147	27
28 Bonanza	1305	-58	98	14	-12	79	15.15	56.7	0.55	1.20	2.12	2.02	Aug. 27	June 9	36	79	111	28
29 Bonanza	2219	-55	99	17	-1	75	17.63	52.9	1.10	1.82	2.97	3.11	Sept. 6	May 29	60	100	144	29
30 Bonanza	2985	-55	100	21	-1	74	19.91	58.4	1.05	1.82	3.34	3.53	Aug. 19	June 1	35	59	127	30
31 Bonanza	1920	-64	102	9	-10	75	15.16	42.7	0.86	1.32	2.88	2.53	Aug. 18	June 15	32	64	103	31
32 Bonanza	2450	-70	96	20	-5	74	16.78	60.8	0.96	1.40	2.10	2.46	Aug. 11	June 21	24	51	88	32
33 Bonanza	775	-60	93	1	-20	76	15.42	53.6	0.72	1.27	1.49	1.90	Aug. 30	June 14	8	77	94	33
34 Bonanza	2000	-	108	-	83	55	-	-	0.56	1.00	1.90	1.38	Sept. 15	May 25	12	113	144	34
35 Bonanza	3216	-60	100	26	2	74	19.06	52.6	1.15	1.99	3.07	2.76	Aug. 10	June 29	32	42	75	35
36 Bonanza	4260	-45	95	25	9	74	20.32	77.5	1.75	2.48	3.83	1.81	Sept. 13	May 31	17	105	147	36
37 Bonanza	2160	-49	97	13	-4	72	17.92	77.0	1.01	1.40	2.31	2.26	Sept. 7	May 25	19	105	139	37
38 Bonanza	2368	-53	105	17	-1	75	16.16	32.2	0.75	1.87	3.02	3.72	Sept. 12	May 27	11	108	132	38
39 Bonanza	2922	-	106	-	-	85	-	-	1.17	1.76	2.75	1.41	Sept. 17	May 17	22	123	153	39
40 Bonanza	719	-56	93	3	-19	75	12.00	44.0	0.66	0.90	1.38	1.84	Aug. 23	June 10	39	74	118	40
41 Bonanza	3128	-49	110	28	10	81	17.24	50.8	1.01	2.37	3.43	1.80	Sept. 16	May 21	53	118	165	41
42 Bonanza	950	-73	101	2	-19	76	12.76	43.3	0.61	1.36	1.67	1.87	Sept. 17	June 13	41	65	104	42
43 Bonanza	2464	-51	101	20	-1	81	12.13	40.3	1.28	1.28	2.01	1.53	Sept. 3	May 31	20	95	118	43
44 Bonanza	2735	-57	101	21	0	84	12.79	27.8	1.03	1.64	2.16	1.49	Aug. 27	June 2	8	86	124	44
45 Bonanza	2952	-49	99	22	0	79	14.75	47.9	1.14	1.66	2.44	2.07	Sept. 9	May 29	45	101	152	45
46 Bonanza	2190	-62	94	16	-5	73	18.30	74.6	0.84	1.41	2.33	2.57	Sept. 4	May 23	9	104	141	46
47 Bonanza	3000	-	-	-	-	-	13.58	46.4	1.08	1.68	2.65	1.36	-	-	-	-	-	47
48 Bonanza	2000	-60	98	13	-8	75	16.56	31.3	0.61	1.71	2.75	2.45	Aug. 26	June 9	28	78	118	48
49 Bonanza	2677	-50	102	17	-1	78	12.45	31.0	0.81	1.41	2.58	2.20	Sept. 5	May 25	25	103	149	49
50 Bonanza	2052	-	-	-	-	-	13.57	24.6	0.87	1.16	2.47	2.80	Aug. 12	June 9	4	64	-	50
51 Bonanza	3500	-58	97	24	-2	73	18.75	52.0	1.25	1.91	3.70	2.76	Aug. 3	June 28	28	36	91	51
52 Bonanza	2300	-57	100	19	-4	76	16.70	40.5	0.83	1.67	2.90	3.22	Aug. 16	June 16	20	61	93	52
53 Bonanza	1968	-60	97	16	-5	75	17.78	54.0	1.00	1.49	2.59	2.98	Aug. 28	June 8	20	81	116	53
54 Bonanza	3800	-49	99	29	5	77	20.50	77.6	1.76	2.16	3.87	2.06	Aug. 12	June 15	39	58	108	54
55 Bonanza	2940	-52	101	21	0	74	17.16	54.1	1.27	1.64	2.96	2.65	Aug. 30	June 2	46	89	130	55



56 Hillspring (Caldwell)	4000	-	-	-	-	-	-	-	22.09	98.8	1.97	2.48	3.95	1.66	16	June 4	Sept. 7	95	135	39
57 Hughenden	2277	-59	104	78	49	-4	78	49	14.56	37.6	0.85	1.38	2.49	2.62	10	June 3	Sept. 2	91	131	57
58 Iron River	1900	-60	97	75	48	-10	75	48	13.98	40.5	0.94	1.45	2.59	2.18	23	June 13	Aug. 20	68	101	58
59 Jasper	3480	-51	98	22	44	-4	74	45	14.31	42.2	0.69	1.12	1.69	1.87	33	June 12	Aug. 24	73	128	59
60 Jenner	2480	-56	105	18	-4	82	82	51	12.27	37.3	0.92	1.49	1.93	1.29	32	May 31	Sept. 12	104	151	60
61 Kananaskis	4560	-50	93	28	6	72	43	43	23.45	88.9	1.46	3.19	3.90	2.51	11	June 27	Aug. 24	58	82	61
62 Keg River	1405	-67	99	7	-12	74	46	46	14.95	48.4	0.76	1.80	1.76	2.16	15	June 20	Aug. 16	57	79	62
63 Kinuso	1928	-57	97	18	-7	75	47	47	18.58	51.4	0.97	1.87	2.96	3.18	17	June 10	Sept. 3	85	115	63
64 Lac La Biche	1835	-55	92	10	-8	74	51	51	17.30	56.0	0.80	1.80	2.47	2.92	7	May 26	Sept. 9	106	125	75
65 Lacombe	2783	-49	100	21	-4	77	47	47	18.17	46.9	1.33	1.94	3.19	2.96	43	June 9	Aug. 26	78	138	65
66 Lake Louise	5032	-63	94	19	-7	71	37	37	26.98	163.6	1.60	1.75	2.39	1.79	34	July 10	July 21	11	58	66
67 Lethbridge	3018	-45	102	28	8	80	51	51	16.74	60.0	1.34	2.07	2.92	1.67	26	May 25	Sept. 13	111	147	67
68 Lloydminster	2120	-51	100	-	-	78	51	-	-	-	-	1.19	2.23	2.28	38	June 3	Aug. 31	89	138	68
69 Lundbreck (Playle Ck.)	3918	-52	114	28	3	78	41	41	18.46	79.3	1.24	2.08	3.57	1.87	36	July 2	Aug. 1	30	86	69
70 Lyndon	4100	-	-	-	-	-	-	-	18.80	69.1	1.48	2.42	3.76	1.89	2	-	-	70	107	70
71 McMurray	1216	-60	102	4	-17	76	47	47	16.32	47.2	0.77	1.39	2.11	3.08	27	June 16	Aug. 22	67	101	71
72 Manyberries	3065	-45	105	21	1	84	53	53	11.05	34.2	0.86	1.14	2.40	1.34	23	May 21	Sept. 15	117	159	72
73 Mayberne Forestry	4890	-	88	-	-	66	47	-	-	-	-	2.71	3.66	5.18	12	June 5	Aug. 26	82	126	73
74 Maycroft	4500	-	-	-	-	-	-	-	19.42	65.4	1.56	1.45	3.69	1.79	-	-	-	-	-	74
75 Meanook	2250	-50	97	14	-3	74	54	54	17.26	46.6	0.96	2.04	2.71	3.30	19	May 22	Sept. 9	110	139	75
76 Medicine Hat	2365	-49	106	24	4	85	56	56	13.55	41.6	0.99	1.53	2.28	1.38	55	May 15	Sept. 18	126	152	76
77 Mountain View	4325	-	-	-	-	-	-	-	23.10	99.1	2.15	2.85	3.64	1.79	-	-	-	-	-	77
78 Naco	2400	-58	105	16	-6	80	49	49	12.75	38.8	0.90	1.08	2.32	1.76	18	June 2	Sept. 4	94	130	78
79 Nordegg	4300	-53	91	21	2	69	41	41	21.75	84.2	1.34	2.16	4.33	3.17	29	June 30	Aug. 2	33	98	79
80 North Cooking Lake	2430	-44	96	17	-1	74	50	50	16.49	53.4	0.83	1.84	2.90	2.61	8	May 31	Sept. 17	109	130	80
81 Okotoks	3448	-46	94	25	5	74	47	47	16.84	54.1	1.27	2.20	3.76	2.43	18	June 8	Sept. 1	85	129	81
82 Olds	3413	-46	99	23	2	74	48	48	17.56	50.4	1.22	1.95	3.31	2.61	35	June 3	Sept. 8	97	161	82
83 Patricia	2403	-51	100	21	1	80	50	50	11.38	25.0	1.11	1.50	2.02	1.80	15	May 22	Sept. 11	112	129	83
84 Peace River	1866	-67	102	7	-12	81	46	46	12.77	41.7	0.51	1.09	2.11	1.86	26	June 2	Sept. 1	91	164	84
85 Pekisko	4721	-52	95	28	10	72	40	40	24.02	94.2	1.93	2.79	4.50	2.00	40	June 29	Aug. 4	36	100	85
86 Pincher Creek	3758	-44	96	28	-6	77	48	48	20.99	82.9	1.55	2.41	4.04	1.72	48	June 1	Sept. 7	98	141	86
87 Pokopine	2440	-	-	21	-3	81	49	49	10.93	24.2	0.82	1.40	1.97	1.58	15	May 30	Sept. 8	101	134	87
88 Ponoka	2810	-	-	-	-	-	-	-	-	-	1.59	1.80	2.80	2.80	-	-	-	-	-	88
89 Raufurly	2250	-55	105	15	-6	77	49	49	-	-	-	-	-	-	45	June 1	Aug. 31	91	144	89
90 Raymond	3140	-45	99	27	7	80	51	51	15.72	53.5	1.30	1.86	2.66	1.70	15	May 19	Sept. 15	119	144	90
91 Red Deer (Penhold)	2965	-50	97	19	-3	74	47	47	16.47	40.9	0.98	1.87	3.27	2.71	28	June 9	Aug. 27	79	113	91
92 Rocky Mountain House	3300	-	-	-	-	-	-	-	19.67	55.3	1.13	1.80	3.86	2.86	6	June 4	Sept. 2	90	108	92
93 Sedgewick	2300	-62	103	18	-2	78	50	50	15.32	32.4	1.05	1.46	3.08	2.67	22	May 31	Sept. 8	100	144	93
94 Seven Persons	2480	-	-	-	-	-	-	-	13.48	44.8	1.06	1.50	2.18	1.33	1	May 30	Sept. 24	117	-	94
95 Sion	2315	-	-	-	-	-	-	-	16.55	57.2	0.82	1.57	2.88	3.20	36	June 15	Aug. 24	70	133	95
96 Slave Lake	1905	-55	94	12	-6	73	49	49	18.15	57.6	0.91	1.72	2.38	2.87	26	June 9	Aug. 26	78	124	96
97 Springdale	3000	-66	95	21	-5	73	44	44	19.94	58.6	1.43	2.08	3.32	3.34	37	June 23	Aug. 10	48	93	97
98 Stettler	2700	-52	100	20	0	76	49	49	16.26	43.9	1.10	1.64	3.14	2.80	32	May 26	Sept. 3	100	155	98
99 Strathmore	3160	-49	98	22	0	77	49	49	14.70	35.0	1.02	1.77	3.14	1.99	35	May 28	Sept. 9	104	149	99
100 Suffield	2543	-53	101	22	2	83	54	54	12.79	33.4	0.63	1.73	2.53	1.33	10	May 30	Sept. 9	102	126	100
101 Telfordville	2250	-	-	-	-	-	-	-	18.65	63.8	1.02	2.27	3.22	2.77	-	-	-	-	-	101
102 Thorhild (Radway)	2075	-61	105	15	-7	76	48	48	15.26	40.2	0.74	1.76	2.65	2.65	26	June 12	Aug. 21	70	115	102
103 Thorsby	2450	-55	98	17	-4	74	48	48	17.17	43.5	1.27	1.52	3.33	3.32	18	June 2	Sept. 9	99	140	103
104 Three Hills	2936	-55	104	20	-5	79	46	46	14.35	30.5	0.85	1.63	3.02	2.16	39	June 13	Aug. 21	69	112	104
105 Vauxhall	2555	-49	105	24	2	81	51	51	12.34	31.5	0.84	1.62	2.08	1.62	32	May 27	Sept. 13	109	144	105
106 Vegreville	2082	-	102	-	-	77	50	50	-	-	0.73	1.55	2.58	2.61	8	June 8	Aug. 28	81	104	106
107 Vermilion	2037	-55	94	13	-8	76	48	48	16.55	31.6	0.93	1.80	3.05	2.80	24	June 8	Aug. 23	75	112	107
108 Viking	2230	-69	103	14	-6	77	48	48	14.94	35.6	0.85	1.55	2.50	2.70	26	June 3	Sept. 1	90	144	108
109 Vulcan	3442	-	-	-	-	-	-	-	14.48	40.9	1.11	1.90	2.68	1.77	6	May 20	Sept. 11	114	132	109
110 Wabamun	2386	-	-	-	-	-	-	-	19.30	57.2	1.31	1.87	3.01	3.64	-	-	-	-	-	110
111 Wabaska	1720	-61	102	12	-8	74	51	51	14.52	32.7	0.54	1.75	2.40	2.51	22	May 29	Sept. 11	105	140	111
112 Wagner	1915	-51	92	15	-7	71	49	49	16.78	55.2	0.97	1.54	1.97	2.81	8	June 2	Aug. 30	89	116	112
113 Wastina	2430	-54	104	14	-9	80	49	49	-	-	0.63	1.23	2.44	2.06	33	June 7	Aug. 28	82	124	113
114 Waterton Lakes	4500	-	-	-	-	-	-	-	-	-	-	4.11	5.92	2.04	-	-	-	-	-	114
115 Waterton Park	4300	-	-	-	-	-	-	-	28.25	141.5	2.66	2.83	3.84	1.78	3	June 3	Sept. 10	99	-	115
116 Wetaskiwin	2480	-53	99	19	-2	76	48	48	17.44	53.0	1.26	1.72	2.88	2.93	43	May 31	Sept. 3	95	137	116
117 Whitecourt	2430	-58	93	18	-6	73	46	46	20.51	60.6	1.30	2.09	2.77	3.94	6	June 22	Aug. 15	54	79	117
118 Winnifred	2725	-	-	-	-	-	-	-	12.65	42.7	1.08	1.66	2.12	1.18	-	-	-	-	-	118

(\*) Indicates less than 31 days. July 15th is arbitrarily taken as the critical date between spring and fall frosts.



## GEOLOGY

The strata underlying Alberta slope upward to the east, and outcrop at the surface according to age, until finally the base on which they rest -- the Precambrian, or Canadian Shield -- is exposed in the northeast corner of the province.

The rocks of the Canadian Shield consist of a series of sedimentary and volcanic formations and igneous intrusions of great variety. They were subjected to mountain-building processes, folded, crushed, and metamorphosed, and the mountains were reduced nearly to their present level before the Palaeozoic sediments were deposited.

Outcrops of the Palaeozoic rocks underlying the Alberta plains, consisting mainly of limestone, dolomite and shale of Ordovician, Silurian and Devonian ages, form a triangular area extending southwest of the early Precambrian deposits that are found in the Lake Athabasca region. The Palaeozoic formations rest upon the gently sloping shelf of the Canadian Shield and pass westward with a dip of a few feet per mile beneath the shales and sandstones of the Cretaceous age.

During middle and late Devonian times, much of Alberta was covered by a shallow sea, which upon its retreat left, in general, a well defined break in the sediments. Eastward from the Rockies, this break becomes less defined and eventually Lower Cretaceous sediments be unconformably on the Upper Devonian.

The Cretaceous formations occupy nearly the whole of the Alberta plains to the Rocky Mountains. Cretaceous sediments vary, but consist predominantly of sandstones of continental, brackish and fresh-water origin, alternating with marine shales. The Cretaceous beds are overlain in places by sediments of Tertiary age. The most extensive Tertiary rocks are found in a belt running northwestward through west-central Alberta where they lie in a broad syncline.

More than 50 million years ago, in Cretaceous and early Tertiary times, the Rocky Mountains were uplifted by intense compressive forces exerted from the west. Strata from the west were thrust eastward over other rocks, and a complex pattern of folded and displaced sediments resulted. Also, there was extensive warping of strata just eastward of this great upthrust from the west. This warping formed the Alberta syncline, a gently concave basin now filled by sedimentary beds. Many important oil and gas fields have been found on the eastern upward slope of the syncline.

The Cretaceous, Mississippian, and Upper Devonian rocks contain the most extensive oil and gas-bearing strata. Some oil and gas deposits occur also in Jurassic, Triassic and Middle Devonian strata.

The major oil fields of Alberta are scattered in a band, running parallel to and just east of the foothills. Gas fields are more numerous and more widespread throughout the province.

The famous Athabasca Oil Sands, which outcrop along the valley of the Athabasca River near Fort McMurray, are Early Cretaceous in age and directly overlie Upper Devonian limestone. Beds of unconsolidated sand, silt and clay more or less impregnated with a very viscous asphaltic oil, make up the oil sands.



# GEOLOGICAL SEQUENCE

(Figures indicate millions of years)

Era and Duration	Period and Duration	Epoch	Geological Events
Cenozoic 55	Quaternary 2	Recent Pleistocene, or Glacial	Topography determined
	Tertiary 53	Pliocene Miocene Oligocene Eocene Palaeocene	Formation of Alber- ta Syncline & Uplift of the Rocky Mount- ains
Mesozoic 106	Cretaceous 55	Upper  Lower	Oil sands deposited. Coal laid down. Oil and gas formed.
	Jurassic 28	Upper Middle Lower	
	Triassic 23	Upper Middle Lower	
Palaeozoic 314	Permian 33		
	Carboniferous 74	Pennsylvanian Mississippian	
	Devonian 37	Upper	Oil and Gas formed.
		Middle Lower	Salt laid down.
	Silurian 22		
	Ordovician 79	Upper Middle Lower	
	Cambrian 69	Upper Middle Lower	
Proterozoic or Precambrian 1,355			

Occurring in both Lower and Upper Cretaceous and Tertiary strata, coal beds are numerous in the southern half of Alberta. In the plains, coal measures of later Cretaceous age appear near the surface over wide areas on the eastern slope of the Alberta Syncline. Older deposits of the Lower Cretaceous period have been brought to the surface in the foothills by folding and faulting of strata. Upper Cretaceous measures are also found in the outer foothills. More recent deposits of Tertiary age are found in smaller areas of both the foothills and plains.

Up to four beds of salt left from dried up seas of Middle Devonian times underlie a large part of east-central Alberta. They occur in the Elk Point formation, of Middle Devonian age, in a band more than 100 miles wide from about Fort McMurray in the north, to Princess in the south.

There are large outcrops of limestone and dolomite in Alberta. The deposits, occurring mainly in Cambrian, Devonian and Carboniferous rocks, are exposed both in the northeast and in the Rocky Mountains in the southwest of the province.

Sand and gravel from two main sources are widely distributed in Alberta. Tertiary gravels are found as erosion remnants capping upland areas in many parts of the plains. Sands and gravels of glacial origin are more widely distributed, though they are relatively scarce in some areas. Near Lethbridge and Red Deer, deposits known as the Saskatchewan gravels occur in strata between Tertiary and glacial deposits. Gravels are also found in pre-glacial stream channels and where they have been exposed in places by erosion -- as at points west of Edmonton in the Wabamun Lake district.

Alberta clays are found principally in glacial and postglacial deposits. Shales are found in older strata. Fresh-water shales of Early Cretaceous age out-cropping



in the foothills, and of Later Cretaceous and Tertiary age in the plains, are suitable for bricks, tile and the manufacture of lightweight aggregate.

Triassic gypsum deposits are exposed at Mowitch Creek and Featherstonhaugh Creek in the Rocky Mountains north of Jasper. Middle Devonian gypsum deposits occur at Peace Point, and along the Salt, Slave and Little Buffalo rivers in the extreme north-eastern part of the province, and in the subsurface at McMurray. A small gypsum deposit of Later Devonian age occurs at Head Creek in the Highwood Range of southern Alberta.

Iron-rich oolitic sandstones occur in Upper Cretaceous rocks in northwestern Alberta. These iron deposits outcrop around the flanks of the Clear Hills and near Gordondale in the Peace River area.

Other minerals found in outcrops of the various strata include phosphates, silica sand, sodium sulphate, magnesium, bromine, iodine, alum, marl, potash, pumicite, talc, uranium, arsenopyrite, molybdenite and bentonite. A fuller explanation of the location and economic significance of the above minerals will be found in the Industrial Minerals Section.



*Fine silica sand from Fort Saskatchewan is used in the manufacture of glass.*



## SURVEY OF PRODUCTION

The net value of production is the measure of the "value added" by each industry to the total value of production. Agriculture, mining, trapping, fishing and the generation of electricity are primary industries; manufacturing and construction the secondary industries. The figures are useful in comparisons of major industries since they rule out duplication within or between industries. The measure is obtained by deducting the cost of materials, fuel, electricity, and supplies consumed in the production process, from the total value of output. For example, the lumber produced by a sawmill becomes the raw material for a planing mill. The planing mill in turn processes it and ships it to a sash and door factory where the dressed lumber becomes windows and doors. Net value of production figures measure only the "value added" at each stage and enable the reader to assess more accurately the contribution of each industry to the total.

Important changes have taken place in the pattern of Alberta productive industries since the end of the war. Agriculture which accounted for half of the net value of production of the province in 1947, now produces only one fifth of the total. Manufacturing, construction and mining each produce well over one fifth. Total net value of production has tripled in the period 1947-1962, rising from \$573 million to \$1,785 million.

The greatest increase has been in the contribution of the mineral industry--from \$55 million in 1947 to \$527 million in 1962. Construction industry growth has been only slightly less substantial, with the annual net value of production rising from \$74 million to over \$438 million. The contribution of the manufacturing industry rose from \$89 million to \$385 million.

Prior to the war, the Alberta economy was subject to violent fluctuations of price of agricultural products, and to the no-less fluctuating vagaries of the weather. In those years when prices were fair and crops were good, prosperity was general. Fluctuations in volume of farm production have been equally violent in the past decade, but the rapid growth and expansion of other industries has offset the effects. For instance, the net value of agricultural production dropped from \$522 million in 1952 to \$307 million in 1954, but increases in the net value of output of the mining, manufacturing and construction industries more than made up the decrease.

Per capita net value of production has been consistently higher in Alberta than for Canada as a whole or than for the other prairie provinces. In the period 1946 to 1960, it rose from \$655 to \$1,213 per capita, as compared with an all-Canada rise from \$550 to \$1,076.



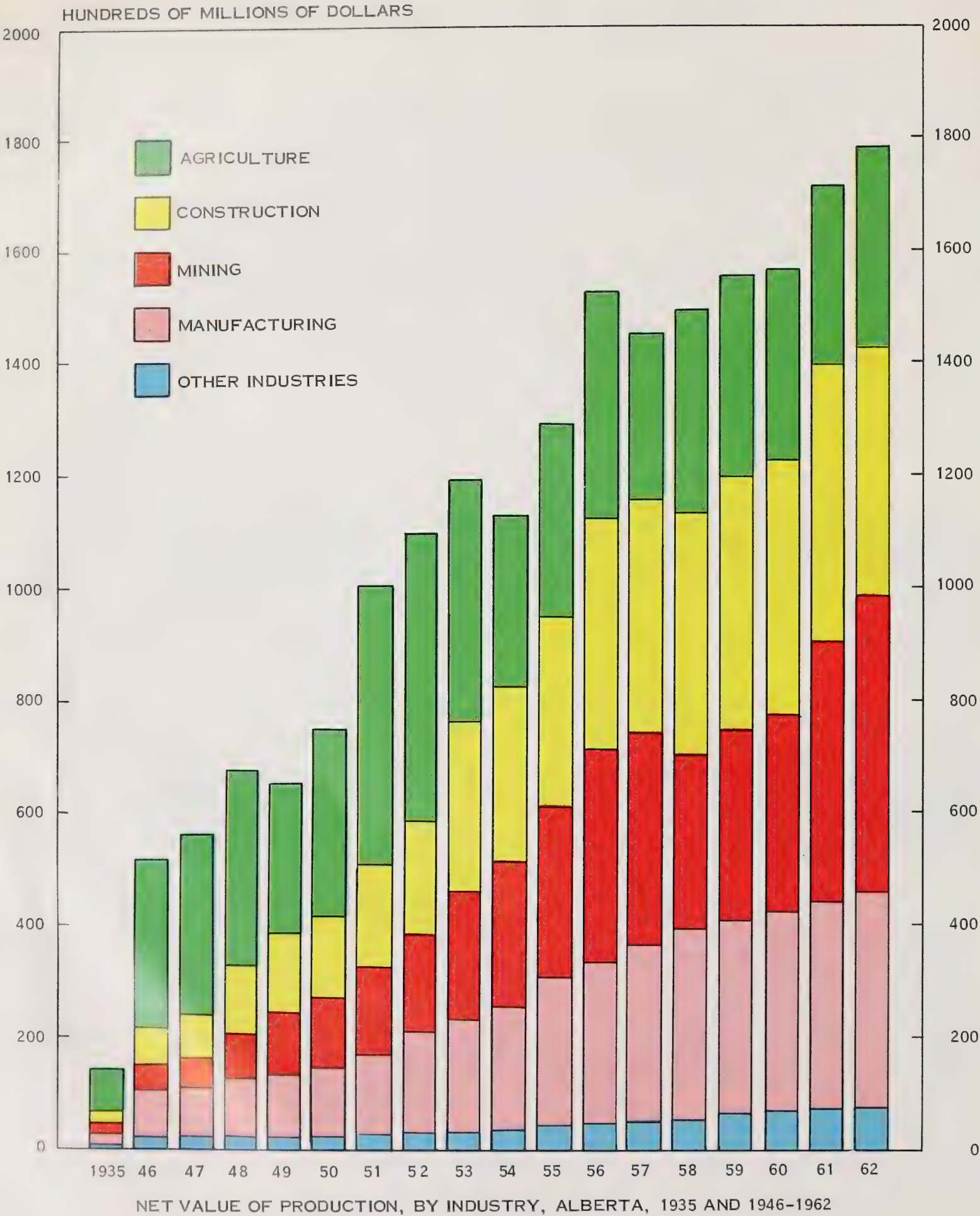




Table 2. NET VALUE OF PRODUCTION AND PER CAPITA NET VALUE OF PRODUCTION  
CANADA, PRAIRIE PROVINCES AND ALBERTA, 1946-1960

	Net Value of Production			Per Capita Net Value of Production		
	Canada \$	Prairie Provinces \$	Alberta \$	Canada \$	Prairie Provinces \$	Alberta \$
1946	6,762,258,000	1,417,431,000	526,187,000	550	600	655
1947	8,011,144,000	1,489,353,000	573,419,000	638	621	695
1948	9,427,809,000	1,775,591,000	687,576,000	735	728	805
1949	9,734,887,000	1,664,790,000	662,508,000	724	673	749
1950	10,928,879,000	1,906,072,000	765,353,000	797	758	838
1951	13,169,417,000	2,468,178,000	1,016,176,000	940	969	1,082
1952	14,064,045,000	2,736,012,000	1,109,566,000	973	1,047	1,140
1953	14,712,673,000	2,688,077,000	1,191,919,000	991	1,002	1,178
1954	14,165,720,000	2,251,559,000	1,132,608,000	927	818	1,072
1955	15,849,948,000	2,732,229,000	1,289,642,000	1,010	973	1,182
1956	17,782,038,000	3,262,803,000	1,524,329,000	1,106	1,143	1,357
1957	17,919,713,000	2,877,767,000	1,451,644,000	1,079	990	1,247
1958	18,073,718,000	3,081,845,000	1,494,941,000	1,058	1,037	1,240
1959	18,838,865,000	3,178,642,000	1,555,432,000	1,078	1,044	1,246
1960	19,219,798,000	3,335,708,000	1,565,538,000	1,076	1,072	1,213

Table 3. NET VALUE OF PRODUCTION BY INDUSTRIES, ALBERTA, 1947-1962

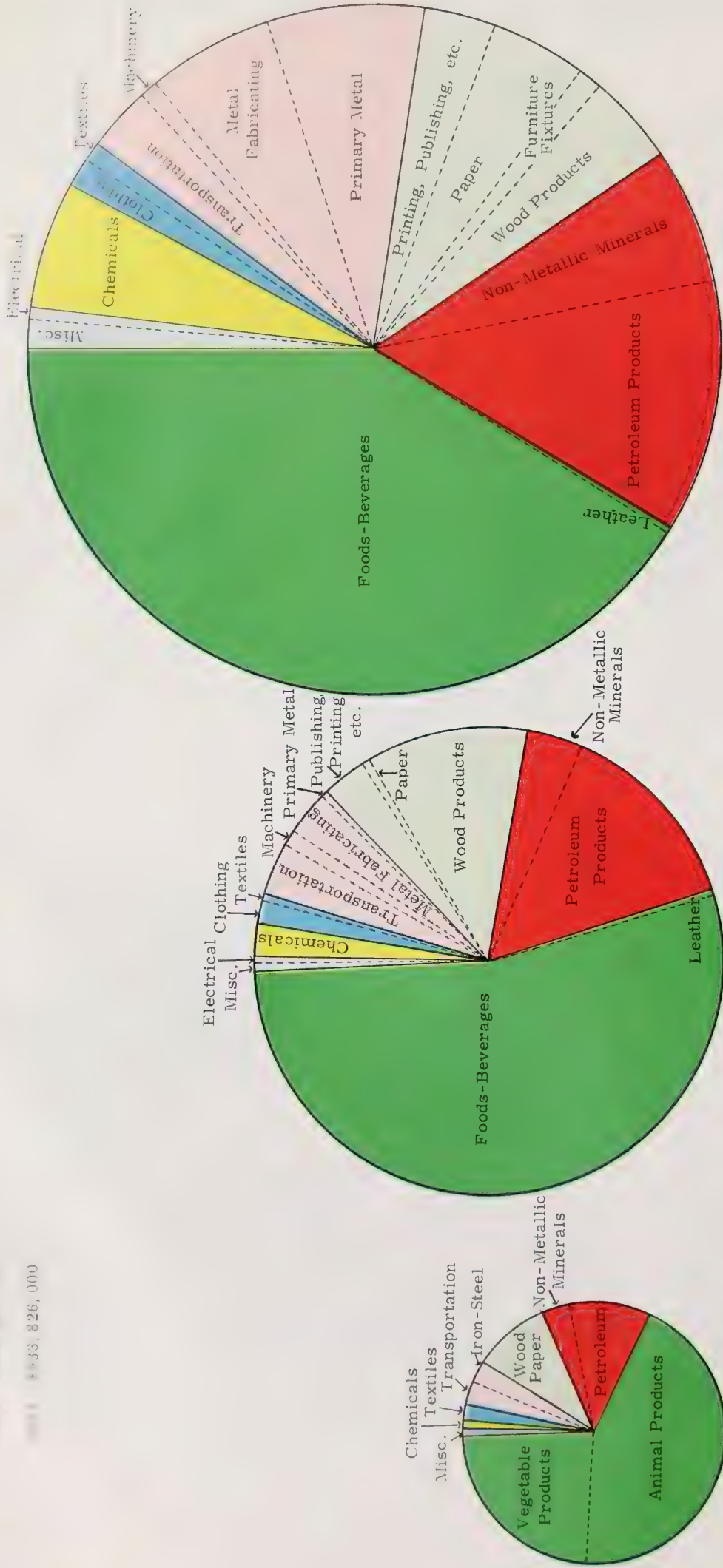
	1947		1948		1949		1950		1951		1952		1953		1954	
	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%
Agriculture	333,501	58.1	360,026	52.3	277,227	41.9	346,074	45.2	505,756	49.8	521,585	47.0	430,252	36.1	306,670	27.1
Forestry	10,173	1.8	9,272	1.3	6,864	1.0	8,954	1.2	10,151	1.0	11,698	1.0	9,777	0.8	12,057	1.1
Fisheries	449	0.1	375	0.1	342	0.1	437	0.1	544	0.1	654	0.1	667	0.1	667	0.1
Trapping	1,538	0.3	2,702	0.4	1,927	0.3	1,889	0.2	2,531	0.2	1,766	0.2	1,617	0.1	1,080	0.1
Mining	54,960	9.6	76,930	11.2	106,806	16.1	122,543	16.0	151,554	14.9	171,119	15.4	227,332	19.1	257,385	22.7
Electric Power	9,708	1.7	10,947	1.6	11,961	1.8	13,863	1.8	16,591	1.6	19,522	1.7	22,414	1.9	25,622	2.3
Manufacturing	89,290	15.6	107,124	15.6	114,681	17.3	123,893	16.2	141,649	13.9	178,221	16.1	199,660	16.7	219,328	19.3
Construction	73,800	12.8	120,200	17.5	142,700	21.5	147,700	19.3	187,400	18.5	205,000	18.5	300,200	25.2	309,800	27.3
TOTAL	573,419	100.0	687,576	100.0	662,508	100.0	765,353	100.0	1,016,176	100.0	1,109,566	100.0	1,191,919	100.0	1,132,608	100.0
	1955		1956		1957		1958		1959		1960		1961*		1962*	
	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%
Agriculture	339,094	26.3	402,204	26.4	292,220	20.1	358,362	24.0	356,753	22.9	340,792	21.8	320,000	18.7	360,000	20.2
Forestry	13,163	1.0	14,701	1.0	15,852	1.1	13,174	0.9	16,671	1.1	20,780	1.3	19,000	1.1	20,000	1.1
Fisheries	688	0.1	790	0.1	854	0.1	879	-	1,016	0.1	1,159	0.1	2,000	0.1	1,000	0.1
Trapping	2,078	0.2	1,132	0.1	1,044	0.1	1,103	0.1	1,197	0.1	2,070	0.1	2,000	0.1	1,000	0.1
Mining	303,752	23.5	380,800	25.0	378,209	26.0	309,218	20.7	336,649	21.6	353,402	22.6	460,199	26.8	526,708	29.5
Electric Power	28,858	2.2	32,771	2.1	36,475	2.5	40,588	2.7	45,761	2.9	48,587	3.1	51,000	3.0	53,000	2.9
Manufacturing	263,309	20.4	285,831	18.7	312,037	21.5	339,439	22.7	346,300	22.3	353,198	22.6	369,492	21.6	385,398	21.6
Construction	338,700	26.3	406,100	26.6	414,953	28.6	432,179	28.9	451,086	29.0	445,551	28.4	490,651	28.6	438,020	24.5
TOTAL	1,289,642	100.0	1,524,329	100.0	1,451,644	100.0	1,494,941	100.0	1,555,432	100.0	1,565,538	100.0	1,714,342	100.0	1,785,126	100.0

(\*) Estimates



GROSS VALUE OF PRODUCTION  
MANUFACTURING INDUSTRIES - ALBERTA

1941	\$52,100,000
1951	\$101,000,000
1961	\$33,826,000



GROSS VALUE OF PRODUCTION, MANUFACTURING INDUSTRIES,  
PERCENTAGE COMPARISON BY INDUSTRY AND PROPORTIONAL COMPARISON OF GROWTH  
ALBERTA, 1941, 1951 and 1961



# MANUFACTURING

## Alberta Advantages:

As an area in which to manufacture, Alberta naturally has certain advantages and certain disadvantages. Central location in western Canada is one of the major advantages. The area to be serviced stretches from the lakehead on the east to the Pacific ocean on the west; and to this can be added, in view of the increasing tempo of development in the Canadian northland, the MacKenzie valley to the Arctic reaches. There is no doubt that plants placed in the heart of this vast area have transportation advantages over those located anywhere on the periphery, except in special cases.

Secondly, within or close to Alberta's borders is one of the world's greatest concentrations of industrial energy. Petroleum, natural gas and by-products, coal are present in abundance. The oil-rich sands of McMurray are just being tapped. Electric energy is cheaply generated from strip mined coal fields; hydro generated electricity is being produced now and more will be available shortly from developments on the Peace River, just outside Alberta's borders to the north-west. Uranium for atomic energy plants is available from mines just outside Alberta to the north and east. Thus, energy in various forms, expensive outside Alberta because of transportation costs, is readily and cheaply available within the province.

Thirdly, Alberta has certain types of basic raw materials in abundance. Proximity to the mineral-rich Canadian Shield has already proven advantageous. Basic materials for a chemical industry -- liquid hydrocarbons, coal, sulphur -- are present in practically unlimited amounts. The established irrigation system in the southern part of the province makes possible a greatly expanded food industry. Forestry resources and markets make possible a wider range of pulp and paper products. The iron deposits in the Peace River bloc are expected to give rise to a basic steel industry; in the meantime, existing steel plants based on scrap materials are extending their range of products, while other metal users are proving up markets in a number of new fields.

Fourthly, the general business climate in Alberta has been very stimulating and expansive for over two decades. Labour, management and government have been co-operating very well, and industrial disputes have been rare and insignificant. The public attitude to industrial development has been helpful and positive; all sections of the community welcome the increased stability which comes from a broader industrial base. The municipal and provincial governments do all in their power to facilitate development and growth by readily and speedily providing information and assistance in arriving at decisions as to sites and regulations.

Lastly, taxation policies and practices are reasonable. The provincial government finances are in excellent state and are not likely to necessitate burdensome taxes. Municipal taxes on industry are carefully controlled by the Department of Municipal Affairs to ensure equitable impact throughout the province. Special concessions are prohibited so that one area cannot be favoured over another for taxation reasons.

## Area Disadvantages:

Certain disadvantages must also be taken into account.

The major disadvantage is the distance from, and consequent cost of shipping to, tidewater. Major industrial centres, such as Calgary and Edmonton, are some 800 rail miles from the ports of Vancouver and Prince Rupert. The present (1964) Canadian



freight rate structure is such that freight tariffs afford protection to Alberta manufacturers producing for local western markets, but are of little help in encouraging manufacturing for export. (Nevertheless, a very considerable volume of a wide range of manufactured products is being exported quite profitably). Special rates which will lower transport costs and increase profit margins, can be negotiated with the railway companies, prior to construction of plants.

The major population centres of North America are in the St. Lawrence valley and northeastern United States. There is no doubt that these are far removed from the province, and that distance makes more difficult reaching mass markets with final consumer goods. In recent years however, the highest population growth rates have been in western Canada, and in the pacific states of the Union. This is a trend which is more likely to accelerate than to diminish over the next two decades, and, as a factor, should be borne in mind by firms with long term investments in mind.

By European and even continental North American standards, the Alberta population total is not large. However, it does comprise one and a half million persons. and the total within easy economic reach in western Canada does comprise five million. Per capita retail trade is above the Canadian average.

Climatic conditions are not ideal. Factories must be constructed adequately to meet the coldest temperatures of the winter months. Pipe, which in more favoured areas is laid above ground, must be well buried or insulated in Alberta. At certain periods of the year, transportation of products and of raw materials requires extra care and attention. All these considerations add to operating and overhead costs. Fortunately, they are offset to some extent by very cheap fuel and power.



*An Edmonton firm produces ornamental iron furniture.*







### Historical:

The annual value of shipments of Alberta manufacturers increased from \$257 million in 1946 to over \$1.0 billion in 1963. The annual increase has been at a cumulative annual rate of nearly 8%.

The range of products has been broadened equally dramatically. In the early 1940's, Alberta manufactures consisted largely of foods and beverages -- from 65% to 70% of the total. By the early 1960's, although the value of production of foods and beverages industry had more than doubled, it comprised only about 40% of the total value of all manufactures. The metal working industries at 15%, and the petroleum and chemical industries at about 22% had increased both proportionately and absolutely in importance.

Employment in manufacturing has practically doubled to close to 40,000 persons and salaries and wages have quintupled to over \$150 million yearly.

No gain has been made however, in the proportion that Alberta contributes to the total of Canadian manufacturing. In 1946, the Alberta share of the total was 3.1%; in 1962 it was only 2.8% in spite of the fact that the percentage increase was greater in Alberta than in any other province. Western Canada with 25% of Canada's population accounts for little more than 16% of the total volume of manufacturing; also with little change since 1946.

This is but a repetition of the wider phenomenon that established industrial complexes attract additional industries more readily than do sparsely industrialized areas. Canadian manufacturing industry was first established on a major scale in the St. Lawrence Valley. The broad manufacturing base which developed there has enabled other more complex industries also to make a start and to produce a greater range of consumer goods. The extent to which Alberta and other western provinces have strengthened and broadened their manufacturing bases in the face of the historical head start of the central Canadian provinces is a measure of both their growth and importance as a prime market, and of the inherent advantages they enjoy in cheap natural resources and efficiency.

In common with most of the other rapid-growth areas of the world, Alberta manufacturing industry has one of the great advantages associated with a late start. The very latest in equipment and techniques are being used; there are no interests vested in old methods, old machinery and rooted labour pools. Particularly in recent years, the volume of manufactured shipments has been increasing rapidly: the number of persons engaged in manufacturing has increased very slowly. Perhaps the point is best illustrated in general terms. Between 1957 and 1963, the value of shipments of manufactures has increased by over \$300 million: there has been little significant change in the number of persons engaged in manufacturing. Most of the increase in value represents increase in range and volume of products, not in prices. Automation has enabled more goods to be produced without a proportionate increase in employment.

### Manufacturing in Western Canada:

Western Canada, for the two decades after World War I was quite properly regarded as being primarily agricultural. Net income from agriculture far exceeded that from all other sources combined. Most products reaching eastern Canadian



and world markets were based on agriculture. Most processed and manufactured products were based on agriculture. The little other manufacturing that there was, was limited to the immediate needs of the relatively small urban aggregations: bakeries, tin smiths, repair depots, newspapers, a little clothing manufacture, cement, small oil refineries. Plants were built mainly for local markets -- not for exporting to foreign markets. By and large, manufactured products were brought in from eastern North America, Europe and Japan, in exchange for farmer's products. The situation was perfectly natural and normal from a historical perspective. But it did induce feelings of hostility and futility since there were great fluctuations in the prices and volume of western Canadian output but few parallel fluctuations in the volumes and prices of the manufactured goods which had to be imported.

Since World War II, the situation has altered dramatically and radically. Agricultural products have remained more constant in price, although volume remains necessarily somewhat subject to the vagaries of the weather. Manufacturing output has trebled in volume. An increasing volume of the output, at least of semi-manufactured or semi-processed materials, is being exported from the region. Chemicals, fertilizers, textiles and clothing, paper and wood, food products, now have North American and world markets. An increasing range of final consumer goods is being manufactured locally, obviating the necessity for imports. Such products as automobile tires, many iron and steel materials and machinery, many furniture items, many electrical and chemical products, formerly imported, are now being fabricated by local suppliers. Transportation costs from the major industrial centres of North America in themselves provide a major incentive for local fabrication, and at the same time provide a real form of protection for local fabricators. With the industrial base broadening rapidly, and with more semi-processed basic materials becoming available locally, western Canada is approaching manufacturing maturity to a degree which even the optimists a few years ago would have thought unlikely.

#### Alberta Manufacturing:

These remarks have been worded deliberately to include the whole of western Canada. They apply in greater degree to Alberta specifically. Industrial expansion in Alberta has been more rapid than in any other province of Canada; the range of new products is more diversified; growth of all sectors with one or two notable exceptions, of the manufacturing industry has been more even. Just as the central provinces now offer increased industrial opportunities by virtue of their extensive existing industrial base, so Alberta also offers prime opportunity in western Canada because of the diversity of the established manufacturing complex.

Alberta offers the additional advantage of being central in the western Canadian market. That market, in the early 1960's, comprises some five million persons between Victoria and the Great Lakes. Alberta in the centre comprises (1963) over 1.4 million; Manitoba and Saskatchewan 1.8 million; and British Columbia 1.7 million. Few areas exceed western Canada in current rate of development or in favourable prospects for future development. The level of personal income is high; ensuring a solidly based local market.

It is well to remember, using the level of personal disposable income as the criterion, that the purchasing power of Canadians represents a market of close to 40 million persons by European standards; or a market of over three times that by Asian,



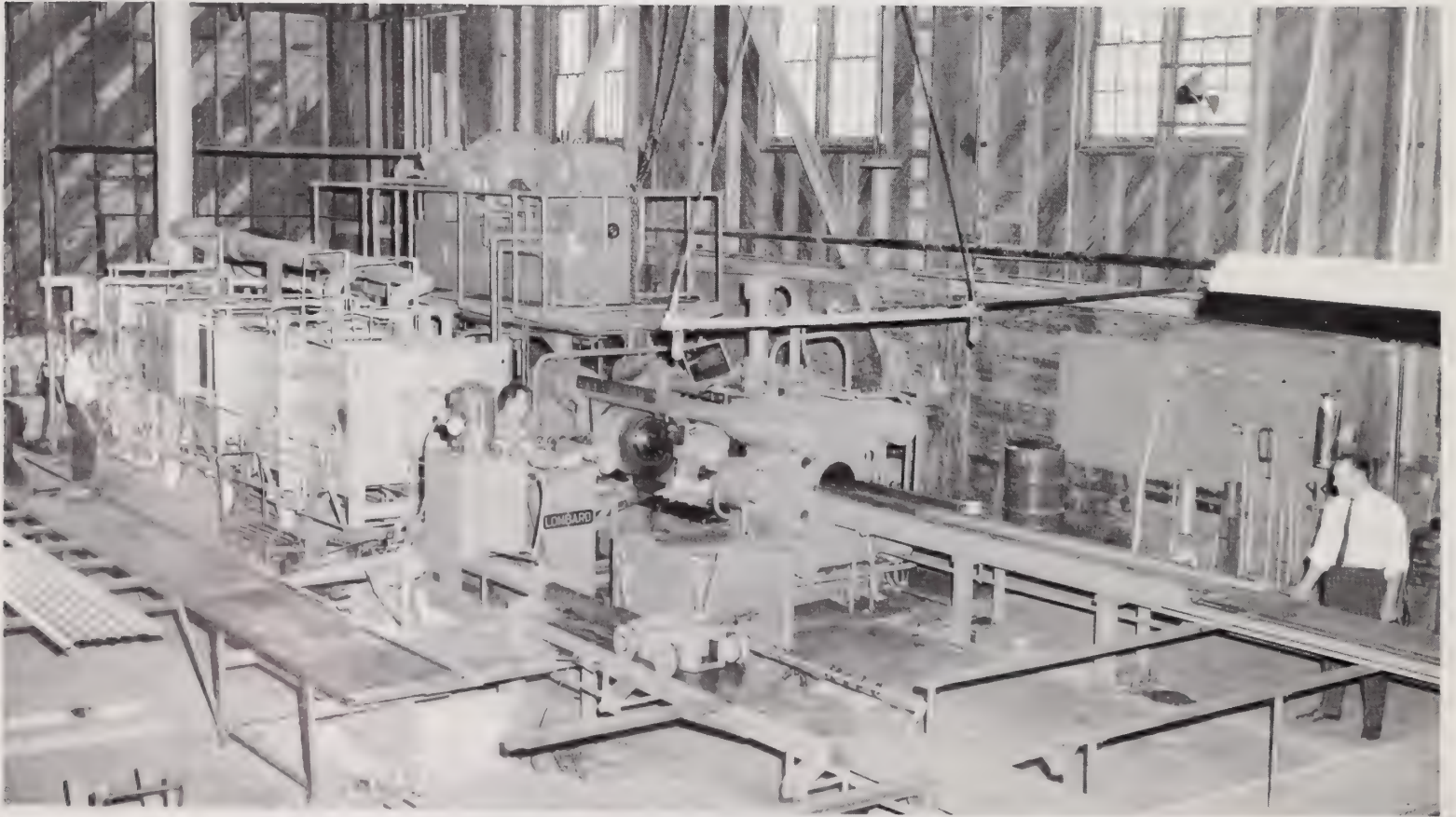
African or Latin American standards. By the same standards, western Canada represents a market of the equivalent of from 10 million Europeans to 30 million or more in other parts of the world. Only with parts of the United States does Canada suffer in comparison.

#### Products:

An imposing range and list of new industrial plants has been established in Alberta in the past decade: an oil seed processing plant; a dehydrated vegetable plant; several meat processing plants; several clothing plants; plywood plants; a pulp mill; steel mills and a nickel refinery; several pipe and tube mills; several plants producing a range of oil industry equipment; automobile tire plants; several mobile home plants; several plants producing various construction materials; a range of chemical plants and oil refineries and to one side of manufacturing industry proper, many gas processing and sulphur extraction plants. Total investment has been well over one billion dollars, and the rate of investment has been increasing.

#### Industrial Opportunities:

Industrial opportunities are becoming increasingly abundant, and increasingly more economically feasible. The broad manufacturing base already established implies that more component parts and semi-processed materials are available for further fabrication and assembly. New industries are being attracted and made feasible by the current range of industrial products. The accompanying table shows some key net railway unloading volumes in the province, and gives an indication both of the range of manufacturing opportunities and the size of the local market. In general terms Alberta figures represent about one-third to one-half of the current western Canadian market.



*Alberta's first aluminum extrusion plant is situated in Calgary.*



Table 5. SELECTED ITEMS OF REVENUE FREIGHT CARRIED BY  
RAILWAYS IN ALBERTA, 1962

Commodities	Originating At Billing Stations Tons	Terminating At Receiving Stations Tons	Delivered To Foreign Connections Rail-Water Tons	Apparent Exports Tons	Apparent Imports Tons
Soybean oil cake and meal -----	181	10,864	-	-	10,683
Vegetable and nut oil cake and meal, n. o. s. -----	5,228	8,182	-	-	2,954
Lettuce -----	-	4,826	-	-	4,826
Tomatoes -----	67	6,050	-	-	5,983
Vegetables, fresh, frozen -----	115	818	-	-	703
Margarine, n. o. s. -----	36	3,172	-	-	3,136
Cheese -----	11	5,324	-	-	5,313
Sand, industrial -----	1,123	47,614	-	-	46,491
Phosphate Rock -----	70	188,483	-	-	188,413
Gypsum, crude -----	95	104,001	-	-	103,906
Rosin and turpentine -----	77	143	-	-	66
Cottonseed oil -----	187	363	-	-	176
Vegetable and nut oils, n. o. s. -----	5,104	4,004	-	1,100	-
Rubber, crude, natural, and synthetic -----	123	5,411	-	-	5,288
Sodium (soda) products -----	33,265	62,752	-	-	29,487
Tar, pitch, and creosote -----	730	4,017	-	-	3,287
Iron and steel (billet, bloom and ingot) -----	146	4,105	-	-	3,959
Iron and steel (bar, rod and slab) -----	-	28,193	-	-	28,193
Iron and steel nails, and wire (woven and not woven) n. o. s. -----	482	12,300	-	-	11,818
Manufactured iron and steel -----	29,172	132,307	-	-	103,135
Cast iron pipe and fittings -----	2,707	2,203	-	504	-
Iron and steel pipe and fittings, n. o. s. -----	13,362	90,695	-	-	77,333
Agricultural implements, n. o. s. -----	3,048	33,170	-	-	30,122
Machinery parts -----	996	4,115	-	-	3,119
Refractories -----	280	4,839	-	-	4,559
Sewer pipe and drain tile (not metal) -----	3,022	8,501	-	-	5,479
Newsprint paper -----	135	25,656	31	-	25,521
Paperboard, fibreboard, and pulpboard -----	159	22,139	-	-	21,980
Furnaces, heaters, radiators, and parts -----	262	3,955	-	-	3,693
Bathroom and lavatory fixtures and sinks -----	57	2,882	-	-	2,825
Glass -----	223	7,867	-	-	7,644
Rope, cordage, and binder twine, n. o. s. -----	269	5,091	-	-	4,822
Syrup and molasses, refined -----	68	1,236	-	-	1,168
Candy and confectionery -----	558	7,242	-	-	6,684
Food products, n. o. s. in cans and packages, not frozen -----	9,994	112,590	-	-	102,596
Soap and cleaning and washing compounds -----	257	18,681	-	-	18,424
Containers, metal -----	7,293	17,470	-	-	10,177



Communication among western Canadian manufacturing firms is improving. Before 1950 local manufacturers could assume justifiably that most of the component parts or materials needed would have to be brought in from other parts of North America. Increasingly they are becoming aware that other local manufacturers are capable of supplying, less expensively, a substantial proportion of the in-process parts and goods. Governments and trade organizations across Canada are actively supporting programmes designed to lessen dependence on imports, both intra-provincial and foreign, by acquainting local manufacturers with the materials needed by, and the products of, other local manufacturers. Parallel programmes are drawing to the attention of Canadian manufacturers those items of foreign imports entering Canada in such volume that they offer prime manufacturing opportunities to Canadian firms. The industrial development co-ordinators of municipal and provincial governments offer assistance in translating the initial studies into industrial action.

The sequence of developing and proving markets by large scale imports from other areas, then assembling components as a stage of local manufacturing, and finally embarking on complete local fabrication, is well established in western Canada. The multibillion dollar volume of retail trade in the four western provinces is in itself an indication that the first stage of the sequence is well developed.

Manufacturing plants are well dispersed throughout the province. As is inevitable, out of a volume of production worth over one billion dollars in total about three-quarters originates in the two major cities: Calgary and Edmonton. Close to \$40 million worth originates in each of Medicine Hat and Lethbridge. In three other census divisions, the annual volume currently ranges from \$15 million to \$30 million. In the remainder, the range is from one-half million dollars in census division 4, the ranch country of eastern Alberta to nearly ten million dollars in census division 9, the eastern slopes of the Rocky Mountains. In recent years a much higher proportion of the larger plants were being built in smaller communities away from the two main cities.

#### Scale of Plants:

Also noticeable is the fact that large (by western Canadian standards) plants are becoming proportionately more numerous. In the decade 1952-1961, the number of plants, each with annual gross value of shipments of over \$10 million, increased from 8 to 20; the number with annual gross value of shipments of from \$1 million to \$10 million increased from 74 to 137. At the other end of the scale the number with annual shipments under \$5,000 dropped from 204 to 67; and the number with annual shipments of from \$5,000 to \$25,000 dropped from 305 to 260.

It may also be noted however, that employment figures for plants do not parallel the same trend. Whereas, as late as 1957, there were two plants with over 1,000 employees, in 1961, there were none; in 1957, ten plants had over 500 employees, in 1961 there were only seven; in 1957 twenty-five plants had between 200 and 500 employees, in 1961 there were only twenty-one. The physical volume of production has been increasing steadily: it is obvious that there has been a steady and dramatic increase in per capita efficiency. Partly, this is a result of the increasing automation, and partly it is because such newer industries, as the chemical industry, have a very high gross value output with a relatively low employment input. Nevertheless, similar trends are also evident in such long established plants as those in the meat packing in-



#### Investment:

Since 1948, approximately \$1.2 billion has been invested in Alberta manufacturing plants. This specific form of investment is far less than that in the more widely publicized oil and gas (mining) industry, but the impact on the provincial economy has been proportionately greater. The annual value of output of the mining industry has increased from \$93 million to \$637 million over the period 1948-1963; the value of output of the manufacturing industry has increased from \$366 million annually to just over \$1.0 billion. While the expenditure of the oil firms undoubtedly triggered off and maintained the rapid economic expansion of the province, the cumulative expansion of the manufacturing base is the more likely to have a permanent effect and influence.

As a proportion of the total of the net value of production of all industries in the province, the manufacturing contribution has increased gradually from 16% to 22% in the period 1947 to 1962. That the proportion has increased so much is a significant achievement in itself in the face of the growth of the proportionate contribution of the mining industry, (from 11% in 1948 to 30% in 1962), and of the construction industry (from 18% to 25%).

The initial impact of a developed manufacturing complex on the economy is in the reduction of the volume of imports needed to maintain living standards and to assist in growth. Later, production for export begins. By the early 1960's, a more pronounced trend towards manufacturing for export from the province was evident. In other words the current trend is from mere reduction of imports necessary, to the more positive role of being a dollar earner in export markets.



*Fibre glass boats are manufactured in this Edmonton plant.*



Table 6 PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
ALBERTA - 1961

		Employees				Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production		
		Estab- lishments No.	Male No.	Female No.	Total No.				Net \$	Gross \$	
	FOOD AND BEVERAGE INDUSTRIES:	424	8,567	2,526	11,093	42,194,779	3,870,820	292,832,824	102,765,437	399,469,081	1
2	Meat Products Industries:										2
3	Slaughtering and meat processing plants	20	2,965	774	3,739	17,251,419	725,017	164,668,980	33,390,583	198,784,580	3
4	Poultry processors	8	181	238	419	1,131,536	67,930	8,555,383	1,482,780	10,106,093	4
5	Dairy Products Industries:										5
6	Butter and cheese factories	81	418	149	567	1,582,010	299,531	22,062,633	3,645,091	26,007,255	6
7	Pasturizing plants	31	1,142	249	1,391	4,602,851	560,014	23,370,475	9,315,378	33,245,867	7
8	Condensed milk plants	2)									8
9	Ice cream manufacturing plants	2)	77	16	93	348,383	57,981	3,920,905	1,668,711	5,647,597	9
10	Ice cream manufacturing plants	1)									10
11	Fruit and vegetable canning and preservers										11
12	Fruit and vegetable canners and preservers	5	204	138	342	858,851	94,445	3,127,215	2,736,493	5,958,153	12
13	Grain Mills:										13
14	Feed manufacturers	60	315	20	335	1,297,561	296,007	10,933,457	3,319,162	14,548,626	14
15	Grain elevators	8	534	85	619	2,333,746	236,726	23,620,965	6,334,835	30,192,526	15
16	Bakery Products Industries:										16
17	Bakeries	147	1,268	568	1,836	5,510,507	456,869	8,433,974	10,411,617	19,302,460	17
18	Beverage Manufacturers:										18
19	Soft drink manufacturers	25	291	80	371	1,343,468	257,291	2,649,096	5,576,891	8,483,278	19
20	Breweries	6	488	21	509	2,540,369	224,915	4,050,350	15,724,544	19,999,809	20
21	Other Food Processors:										21
22	Confectionery manufacturers	5	11	13	24	60,214	2,727	66,335	77,821	146,883	22
23	Animal oils and fats plants	1)									23
24	Biscuit manufacturers	3)									24
25	Breakfast cereal manufacturers	2)									25
26	Distilleries	1)									26
27	Macaroni manufacturers	1)	593	143	736	2,918,891	549,311	15,706,999	7,604,454	23,860,764	27
28	Malt and malt products manufacturers	1)									28
29	Sausage and sausage casing manufacturers	2)									29
30	Sugar refineries	3)									30
31	Vegetable oil mills	2)									31
32	Miscellaneous food manufacturers, n. e. s.	7	80	32	112	414,973	42,056	1,666,057	1,477,077	3,185,190	32
33	RUBBER INDUSTRIES: (1)										33
34	LEATHER INDUSTRIES:	8	83	26	109	352,902	23,233	680,627	492,658	1,196,518	34
35	Leather Glove Factories	1)									35
36	Leather Tanneries	1)	49	18	67	216,846	20,234	579,873	340,356	940,463	36
37	Shoe Factories	1)									37
38	Miscellaneous Leather Products Manufacturers, n. e. s.	5	34	8	42	136,056	2,999	100,754	152,302	256,055	38
39	TEXTILE INDUSTRIES:	17	220	161	381	1,626,073	77,305	4,662,274	2,675,890	7,415,469	39
40	Canvas Products Industry	8	41	30	71	235,421	4,890	406,191	446,018	857,099	40
41	Embroidery, Pleating, Hemstitching Manufacturers	4	6	11	17	36,418	485	14,966	53,346	68,797	41
42	Cordage and Twine Industry	1)									42
43	Cotton and Jute Bag Industry	2)	173	120	293	1,354,234	71,930	4,241,117	2,176,526	6,489,573	43
44	Synthetic Textile Mills	1)									44
45	Miscellaneous Textile Industries, n. e. s.	1)									45
46	KNITTING MILLS:	3	5	25	30	81,443	3,800	90,200	103,987	197,987	46
47	Knitting Mills (other than hosiery)	3	5	25	30	81,443	3,800	90,200	103,987	197,987	47
48	CLOTHING INDUSTRIES:	18	204	1,006	1,210	3,256,246	37,338	6,297,892	6,480,795	12,816,025	48
49	Men's Clothing Industry:										49
50	Men's clothing factories	9	151	797	948	2,622,749	26,078	5,236,774	5,317,780	10,580,632	50
51	Women's Clothing Industry:										51
52	Women's clothing factories	6	43	192	235	581,778	9,777	994,840	1,070,317	2,074,934	52
53	Fur Goods Industry	2	3	4	7	12,963	622	19,878	26,859	47,359	53
54	Hat and Cap Industry	1	7	13	20	38,756	861	46,400	65,839	113,100	54
55	WOOD INDUSTRIES:	443	3,293	177	3,470	9,901,420	842,436	24,026,303	18,632,472	43,501,211	55
56	Sawmills	332	1,441	-	1,441	3,213,699	362,926	8,449,812	4,952,262	13,765,000	56
57	Veneer and Plywood Mills	3	315	90	405	1,297,446	148,379	2,096,796	2,318,286	4,563,461	57
58	Sash and Door and Planing Mills	95	1,274	74	1,348	4,308,846	261,266	10,861,911	8,967,328	20,090,505	58
59	Coffin and Casket Industry	7	33	6	39	153,387	4,923	425,562	320,107	750,592	59
60	Miscellaneous Wood Products, n. e. s. (Including Wooden Box Factories, Woodenware, Wood Preservation)	6	230	7	237	928,042	64,942	2,192,222	2,074,489	4,331,653	60
61	FURNITURE AND FIXTURE INDUSTRIES:	69	701	117	818	2,854,152	88,698	4,689,527	5,112,144	9,890,369	61
62	Household Furniture Industry	58	312	41	353	1,219,019	32,850	1,586,717	2,156,929	3,776,496	62
63	Other Furniture Industries	11	389	76	465	1,635,133	55,848	3,102,810	2,955,215	6,113,873	63
64	PAPER AND ALLIED INDUSTRIES:	22	1,040	160	1,200	5,998,961	1,512,206	20,039,605	19,814,229	41,366,040	64
65	Pulp and Paper Mills	3)									65
66	Asphalt Roofing Manufacturers	3)	737	38	775	4,239,730	1,440,382	14,611,435	15,494,554	31,546,371	66
67	Paper Box and Bag Manufacturers:										67
68	Folding box and set-up box manufacturers	2)									68
69	Corrugated box manufacturers	3)	248	107	355	1,498,472	55,110	4,623,766	3,835,991	8,514,867	69
70	Paper bag manufacturers	3)									70
71	Miscellaneous Paper Converters	8	55	15	70	260,759	16,714	804,404	483,684	1,304,802	71
72	PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	163	1,813	537	2,350	9,638,887	204,822	8,940,148	19,644,246	28,789,216	72
73	Commercial Printing										73
74	Printing and Bookbinding	66	448	160	608	2,497,469	46,857	1,897,602	3,948,450	5,892,909	74
75	Lithographing	15	255	79	334	1,299,431	28,856	1,102,131	2,101,454	3,232,441	75
76	Engraving, Stereotyping and Allied Industries:										76
77	Engraving and duplicate plates	8)									77
78	Trade composition or typesetting	2)	74	16	90	400,395	8,136	205,952	573,498	787,586	78
79	Printing and Publishing	72	1,036	282	1,318	5,441,592	120,973	5,734,463	13,020,844	18,876,280	79



Preliminary Principal Statistics - Manufacturing Industries  
Alberta - 1961 (Continued)

		Employees				Salaries and Wages	Cost of Fuel and Electricity	Value of Production			
		Estab- listments No.	Male No.	Female No.	Total No.	\$	\$	Cost of Materials \$	Net \$	Gross \$	
80	PRIMARY METAL INDUSTRIES:	21	1,521	30	1,551	8,263,646	1,201,391	43,455,896	23,240,903	67,898,190	80
81	Aluminum rolling, casting and extruding	4	21	-	21	73,087	4,170	55,922	141,488	201,580	81
82	Iron foundries	5	198	7	205	943,475	79,828	1,658,790	2,538,839	4,277,457	82
83	Iron and steel mills	3	376	10	386	2,222,382	412,981	3,921,379	2,290,026	6,624,386	83
84	Metal rolling, casting and extruding	4	27	2	29	105,903	10,690	503,398	283,472	797,560	84
85	Copper and alloy rolling, casting and extruding	1)									85
86	Smelting and refining	1)	899	11	910	4,918,799	693,722	37,316,407	17,987,078	55,997,207	86
87	Steel pipe and tube mills	3)									87
88	METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	147	3,075	240	3,315	14,768,709	497,141	27,522,712	24,251,684	52,271,537	88
89	Boiler and plate works	8	339	26	365	1,946,606	111,580	4,235,420	3,094,548	7,441,548	89
90	Fabricated structural metal industry	8	855	91	946	4,177,987	97,922	8,084,728	6,010,963	14,193,613	90
91	Ornamental and Architectural metal industry	23	299	29	328	1,209,574	36,276	2,520,056	2,423,748	4,980,080	91
92	Metal stamping, pressing and coating industry	23	435	35	470	1,970,498	65,974	6,289,005	4,077,633	10,432,612	92
93	Wire and wire products manufacturers	7	52	4	56	287,467	9,214	871,365	568,706	1,449,285	93
94	Heating equipment manufacturers	6	56	2	58	193,063	2,255	398,145	415,575	815,975	94
95	Machine shops	62	853	49	902	4,237,508	150,101	4,169,665	6,087,916	10,407,682	95
96	Hardware, tool and cutlery manufacturers	3)									96
97	Miscellaneous metal fabricating industries, n.e.s.	7)	186	4	190	746,006	23,819	954,328	1,572,595	2,550,742	97
98	MACHINERY INDUSTRIES: (Except Electrical Machinery)	20	349	38	387	1,643,103	166,511	3,855,602	2,558,259	6,580,372	98
99	Agricultural Implement Industry	7	124	7	131	476,360	76,251	944,489	988,260	2,009,000	99
100	Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	13	225	31	256	1,166,743	90,260	2,911,113	1,569,999	4,571,372	100
101	TRANSPORTATION EQUIPMENT INDUSTRIES:	34	2,912	161	3,073	12,598,033	283,338	14,276,245	14,372,319	28,931,902	101
102	Aircraft and parts manufacturers	9	931	117	1,048	5,007,445	59,303	1,037,221	6,284,334	7,380,858	102
103	Truck body and trailer manufacturers	15	427	20	447	1,375,385	43,595	3,612,080	1,222,985	4,878,660	103
104	Motor vehicle parts and accessories	6	119	15	134	467,007	28,250	947,827	602,887	1,578,964	104
105	Railway rolling stock industry	2)									105
106	Boatbuilding and repairs	1)	1,435	9	1,444	5,748,196	152,190	8,679,117	6,262,113	15,093,420	106
107	Miscellaneous vehicle manufacturers, n.e.s.	1)									107
108	ELECTRICAL PRODUCTS INDUSTRIES:	9	183	24	207	760,292	59,573	3,309,312	3,325,841	6,694,726	108
109	Battery manufacturers	4	79	10	89	388,011	47,717	1,663,489	1,301,975	3,013,181	109
110	Communication equipment manufacturers	2)									110
111	Manufacturers of electrical industrial equipment	2)	104	14	118	372,281	11,856	1,645,823	2,023,866	3,681,545	111
112	Manufacturers of miscellaneous electrical products	1)									112
113	NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	89	2,831	437	3,268	13,531,284	2,464,685	22,935,767	34,967,709	60,368,161	113
114	Cement manufacturers	3	403	12	415	2,163,415	1,261,658	1,773,889	9,831,102	12,866,649	114
115	Concrete products manufacturers	39	616	44	660	2,744,569	213,810	3,870,762	7,374,062	11,458,634	115
116	Ready-mix concrete manufacturers	13	401	25	426	2,044,555	307,621	8,133,181	3,617,185	12,057,987	116
117	Clay Products Manufacturers:										117
118	Clay products (domestic clays)	7	359	13	372	1,453,758	108,665	877,460	1,839,474	2,825,599	118
119	Clay products (from imported clays)	3	54	3	57	159,464	8,035	101,202	222,099	331,336	119
120	Stone products manufacturers	3	29	11	40	130,932	6,884	140,487	295,618	442,989	120
121	Mineral wool manufacturers	3	131	10	141	585,090	132,833	1,072,935	2,125,190	3,330,958	121
122	Glass and Glass Products Manufacturers:										122
123	Glass manufacturers	3	443	235	678	2,655,046	87,879	3,050,567	5,470,694	8,609,140	123
124	Glass products manufacturers	2)									124
125	Lime manufacturers	5)	321	83	404	1,334,575	261,711	3,166,054	3,521,200	6,948,965	125
126	Gypsum products manufacturers	2)									126
127	Miscellaneous non-metallic mineral products industries, n.e.s.	6	74	1	75	259,880	75,589	749,230	671,085	1,495,904	127
128	PETROLEUM AND COAL PRODUCTS INDUSTRIES:	19	1,391	71	1,462	8,387,597	2,116,808	75,766,144	28,458,077	106,341,029	128
129	Petroleum refining	11	1,347	70	1,417	8,249,836	2,084,219	75,278,722	28,175,058	105,537,969	129
130	Manufacturers of lubricating oils and greases	1)									130
131	Miscellaneous petroleum and coal products industries, n.e.s.	7)	44	1	45	137,761	32,589	487,422	283,019	803,030	131
132	CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:	35	1,686	135	1,821	9,802,969	3,486,960	21,472,707	35,767,876	60,727,543	132
133	Manufacturers of plastics and synthetic resins	4	444	43	487	2,902,200	706,634	7,205,881	10,010,949	17,923,464	133
134	Manufacturers of soaps and cleaning compounds	4	16	7	23	72,755	6,350	116,000	848,122	970,472	134
135	Manufacturers of industrial chemicals	11	1,045	77	1,122	5,900,160	2,697,262	11,659,195	21,649,149	36,005,606	135
136	Other Chemical Industries:										136
137	Explosives and ammunition manufacturers	1)									137
138	Manufacturers of pharmaceuticals and medicines	2)	150	7	157	805,334	69,166	1,653,336	2,726,821	4,449,323	138
139	Manufacturers of printing inks	2)									139
140	Paint and varnish manufacturers	2)									140
141	Miscellaneous chemical industries, n.e.s.	9	31	1	32	122,520	7,548	838,295	532,835	1,378,678	141
142	MISCELLANEOUS MANUFACTURING INDUSTRIES:	111	862	126	988	3,753,838	251,604	6,953,720	7,680,258	14,885,582	142
143	Scientific and Professional Equipment Manufacturers:										143
144	Instrument and related products manufacturers	4	36	13	49	187,275	3,356	269,509	266,519	539,384	144
145	Ophthalmic goods manufacturers	4	22	2	24	72,380	2,590	147,518	187,517	337,625	145
146	Dental laboratories	27	96	29	125	435,174	8,634	172,293	642,252	823,179	146
147	Jewellery and silverware manufacturers	4	16	4	20	59,380	863	35,427	97,830	134,120	147
148	Venetian blind manufacturers	4	5	5	10	26,253	1,691	80,009	76,073	157,773	148
149	Plastic fabricators, n.e.s.	15	85	27	112	382,739	41,269	1,055,742	681,699	1,778,710	149
150	Signs and displays industry	32	231	28	259	1,122,462	36,181	772,534	2,102,260	2,910,975	150
151	Stamp and stencil (rubber and metal) manufacturers	3	17	4	21	65,940	2,476	54,663	119,073	176,212	151
152	Artificial ice manufacturers	2)									152
153	Broom, brush and mop industry	2)									153
154	Candle manufacturers	1)									154
155	Fountain pen and pencil manufacturers	1)									155
156	Fur dressing and dyeing industry	2)									156
157	Model and pattern manufacturers	1)	354	14	368	1,402,235	154,544	4,366,025	3,507,035	8,027,604	157
158	Orthopaedic and surgical appliance manufacturers	2)									158
159	Sporting goods industry	1)									159
160	Statuary art goods, regalia and novelties manufacturers	1)									160
161	Miscellaneous industries, n.e.s.	1)									161
162	Rubber tire and tube manufacturers	2)									162
163	Miscellaneous rubber goods industries, n.e.s.	2)									163
164	GRAND TOTALS - ALBERTA	1,652	30,736	5,997	36,733	149,414,334	17,188,669	581,807,505	350,344,784	949,340,958	164

(1) Included in "Miscellaneous Manufacturing Industries".







Preliminary Principal Statistics - Manufacturing Industries  
Calgary - 1961 (Continued)

		Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production		
			Male No.	Female No.	Total No.				Net \$	Gross \$	
62	PRIMARY METAL INDUSTRIES:	9	197	9	206	945,066	120,784	9,191,929	2,244,880	11,557,593	62
63	Aluminum Rolling, Casting and Extruding	1)									63
64	Copper and Alloy Rolling, Casting and Extruding	1)									64
65	Iron Foundries	1)									65
66	Iron and Steel Mills	1)	197	9	206	945,066	120,784	9,191,929	2,244,880	11,557,593	66
67	Metal Rolling, Casting and Extruding	4)									67
68	Steel Pipe and Tube Mills	1)									68
69	METAL FABRICATING INDUSTRIES (Except Machinery and Transportation Equipment Industries)	41	1,191	115	1,306	5,722,975	165,661	10,795,916	8,995,092	19,956,669	69
70	Boiler and Plate Works	3	144	10	154	816,752	28,134	1,914,915	1,616,795	3,559,844	70
71	Ornamental and Architectural Metal Industry	13	196	21	217	721,228	18,237	1,585,324	1,570,971	3,174,532	71
72	Metal Stamping, Pressing and Coating Industry	6	180	12	192	752,609	21,463	1,360,254	1,113,235	2,494,952	72
73	Machine Shops	10	231	12	243	1,193,157	48,474	1,349,842	1,727,738	3,126,054	73
74	Fabricated Structural Metal Industry	2)									74
75	Hardware, Tool and Cutlery Manufacturers	1)									75
76	Wire and Wire Products Manufacturers	4)	440	60	500	2,239,229	49,353	4,585,581	2,966,353	7,601,287	76
77	Miscellaneous Metal Fabricating Industries, n.e.s.	2)									77
78	MACHINERY INDUSTRIES: (Except Electrical Machinery)	5	75	7	82	380,269	15,768	875,121	722,003	1,612,892	78
79	Agricultural Implement Industry	2)	75	7	82	380,269	15,768	875,121	722,003	1,612,892	79
80	Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	3)									80
81	TRANSPORTATION EQUIPMENT INDUSTRIES:	12	1,666	82	1,748	7,181,988	145,363	10,271,349	8,074,914	18,491,626	81
82	Aircraft and Parts Manufacturers	2)									82
83	Truck body and Trailer Manufacturers	5)									83
84	Motor Vehicle Parts and Accessories Manufacturers	3)	1,666	82	1,748	7,181,988	145,363	10,271,349	8,074,914	18,491,626	84
85	Railway Rolling Stock Industry	1)									85
86	Miscellaneous Vehicle Manufacturers, n.e.s.	1)									86
87	ELECTRICAL PRODUCTS INDUSTRIES:	6	86	11	97	431,784	49,797	1,798,489	1,392,379	3,240,665	87
88	Battery Manufacturers	4)									88
89	Communications Equipment Manufacturers	1)	86	11	97	431,784	49,797	1,798,489	1,392,379	3,240,665	89
90	Manufacturers of Miscellaneous Electrical Products	1)									90
91	NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	22	744	60	804	3,165,392	329,341	7,789,214	7,115,008	15,233,563	91
92	Concrete Products Manufacturers	11	294	34	328	1,205,563	83,545	1,555,372	3,052,436	4,691,353	92
93	Ready-Mix Concrete Manufacturers	3	173	6	179	918,891	77,491	3,156,903	1,263,430	4,497,824	93
94	Clay Products (From Imported Clays)	1)									94
95	Stone Products Manufacturers	1)									95
96	Mineral Wool Manufacturers	1)									96
97	Glass Products Manufacturers	1)	277	20	297	1,040,938	168,305	3,076,939	2,799,142	6,044,386	97
98	Gypsum Products Manufacturers	2)									98
99	Miscellaneous Non-Metallic Mineral Products Industries, n.e.s.	2)									99
100	PETROLEUM AND COAL PRODUCTS INDUSTRIES:	4	422	17	439	2,638,507	568,835	23,745,168	9,038,577	33,352,580	100
101	Petroleum Refining	3)									101
102	Miscellaneous Petroleum and Coal Products Industries, n.e.s.	1)	422	17	439	2,638,507	568,835	23,745,168	9,038,577	33,352,580	102
103	CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:	14	477	22	499	2,611,082	896,210	4,168,931	6,895,285	11,960,426	103
104	Explosives and Ammunition Manufacturers	1)									104
105	Manufacturers of Industrial Chemicals	2)									105
106	Manufacturers of Pharmaceuticals and Medicines	1)									106
107	Manufacturers of Printing Inks	1)	477	22	499	2,611,082	896,210	4,168,931	6,895,285	11,960,426	107
108	Manufacturers of Soaps and Cleaning Compounds	1)									108
109	Miscellaneous Chemical Industry, n.e.s.	8)									109
110	MISCELLANEOUS MANUFACTURING INDUSTRIES:	42	399	40	439	1,660,744	129,195	3,499,276	2,326,562	5,955,033	110
111	Dental Laboratories	9	26	7	33	124,674	1,946	45,978	173,414	221,338	111
112	Jewellery and Silverware Manufacturers	3	7	3	10	31,675	363	8,427	39,567	48,357	112
113	Signs and Displays	13	100	10	110	490,566	16,420	370,500	965,214	1,352,134	113
114	Artificial Ice Manufacturers	2)									114
115	Broom, Brush and Mop Industry	2)									115
116	Fountain Pen and Pencil Manufacturers	1)									116
117	Fur Dressing and Dyeing Industry	1)									117
118	Instrument and Related Products Manufacturers	1)	266	20	286	1,013,829	110,466	3,074,371	1,148,367	4,333,204	118
119	Ophthalmic Goods Manufacturers	1)									119
120	Orthopaedic and Surgical Appliance Manufacturers	1)									120
121	Plastic Fabricators, n.e.s.	3)									121
122	Stamp and Stencil (Rubber and Metal) Manufacturers	1)									122
123	Venetian Blind Manufacturers	2)									123
124	Rubber Industries	1)									124
125	Knitting Mills	1)									125
GRAND TOTALS - CALGARY		360	9,403	1,637	11,040	46,618,956	3,773,578	181,828,169	96,559,006	282,160,753	

(1) Included in "Miscellaneous Manufacturing Industries".  
(2) Included in "Miscellaneous Manufacturing Industries".



Table 8. PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
EDMONTON - 1961

		Employees				Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production		
		Estab-lishments No.	Male No.	Female No.	Total No.				Net \$	Gross \$	
1	FOODS AND BEVERAGE INDUSTRIES:	78	3,628	995	4,623	18,497,081	1,350,384	123,167,688	42,392,390	166,910,462	1
2	Meat Products Industries:										2
3	Slaughtering and meat packing plants	8	1,922	511	2,433	11,177,387	454,573	94,938,927	23,180,769	118,574,269	3
4	Dairy Products Industries:										4
5	Pasteurizing plants	4	579	112	691	2,179,138	230,782	11,615,523	4,316,941	16,163,246	5
6	Grain Mills:										6
7	Feed manufacturers	9	130	9	139	595,149	196,176	5,918,031	1,842,234	7,956,441	7
8	Bakery Products Industries:										8
9	Bakeries	35	586	198	784	2,445,977	196,079	3,757,527	4,980,353	8,933,959	9
10	Beverage Manufacturers										10
11	Soft drink manufacturers	6	137	37	174	651,758	153,706	1,346,649	2,978,947	4,479,302	11
12	Other Food Processors:										12
13	Animal oils and fats plants	1)									13
14	Biscuit manufacturers	2)									14
15	Breakfast cereal manufacturers	1)									15
16	Breweries	2)									16
17	Butter and cheese plants	2)									17
18	Confectionery manufacturers	1)									18
19	Flour mills	1)	274	128	402	1,447,672	119,068	5,591,031	5,093,146	10,803,245	19
20	Fruit and vegetable canners and preservers	1)									20
21	Ice cream manufacturers	1)									21
22	Miscellaneous food manufacturers, n.e.s.	2)									22
23	Poultry processors	1)									23
24	Sausage and sausage casing manufacturers	1)									24
25	RUBBER INDUSTRIES: (1)										25
26	LEATHER INDUSTRIES: (2)										26
27	TEXTILE INDUSTRIES: (3)										27
28	KNITTING MILLS: (4)										28
29	CLOTHING INDUSTRIES:	12	184	935	1,119	3,037,600	32,751	6,004,804	6,138,674	12,176,229	29
30	Men's Clothing Factories	7)									30
31	Women's Clothing Factories	4)	184	935	1,119	3,037,600	32,751	6,004,804	6,138,674	12,176,229	31
32	Fur Goods	1)									32
33	WOOD INDUSTRIES:	34	764	115	879	2,982,351	188,362	5,667,914	4,977,112	10,833,388	33
34	Sash and Door and Planing Mills	24	453	41	494	1,645,377	68,690	3,331,316	2,084,576	5,484,582	34
35	Veneer and Plywood Mills	2)									35
36	Wooden Box Factories	1)									36
37	Coffin and Casket Industry	3)									37
38	Wood Preservation	1)	311	74	385	1,336,974	119,672	2,336,598	2,892,536	5,348,806	38
39	Woodenware	1)									39
40	Miscellaneous Wood Products, n.e.s.	2)									40
41	FURNITURE AND FIXTURE INDUSTRIES:	24	464	84	548	1,901,404	62,919	3,347,188	3,591,258	7,001,365	41
42	Household Furniture Industries	18	107	10	117	398,513	12,259	416,027	812,316	1,240,602	42
43	Other Furniture Industries	6	357	74	431	1,502,891	50,660	2,931,161	2,778,942	5,760,763	43
44	PAPER AND ALLIED INDUSTRIES:	0	263	48	311	1,262,758	141,573	3,266,205	2,955,657	6,363,435	44
45	Pulp and Paper Mills	1)									45
46	Asphalt Roofing Manufacturers	1)									46
47	Folding Box and Set-up Box Manufacturers	1)	228	36	264	1,109,638	136,521	2,847,156	2,846,558	5,830,235	47
48	Corrugated Box Manufacturers	1)									48
49	Paper Bag Manufacturers	1)									49
50	Miscellaneous Paper Converters	4	35	12	47	153,120	5,052	419,049	109,099	533,200	50
51	PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	38	623	209	832	3,745,614	74,434	3,570,208	8,380,926	12,025,568	51
52	Commercial Printing:										52
53	Printing and bookbinding	24	205	73	278	1,148,083	21,477	745,031	1,850,918	2,617,426	53
54	Lithographing	6	138	41	179	746,204	13,944	596,882	1,211,460	1,822,286	54
55	Engraving, Stereotyping and Allied Industries:										55
56	Engraving and duplicate plates	4	31	7	38	169,035	4,320	59,000	209,465	272,785	56
57	Printing and Publishing	4	249	88	337	1,682,292	34,693	2,169,295	5,109,083	7,313,071	57
58	PRIMARY METAL INDUSTRIES:	8	656	21	677	3,715,909	517,586	13,907,851	7,689,885	22,115,322	58
59	Aluminum Rolling, Casting and Extruding	2)									59
60	Iron Foundries	3)	656	21	677	3,715,909	517,586	13,907,851	7,689,885	22,115,322	60
61	Iron and Steel Mills	2)									61
62	Steel Pipe and Tube Mills	1)									62
63	METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	64	1,558	113	1,671	7,693,385	277,411	15,004,759	12,611,550	27,893,720	63
64	Ornamental and Architectural Metal Industry	9	99	8	107	477,473	17,303	927,080	829,965	1,774,348	64
65	Metal Stamping, Pressing and Coating Industry	15	247	23	270	1,185,396	41,600	4,878,963	2,861,743	7,782,306	65
66	Machine Shops	25	499	33	532	2,566,527	78,637	2,430,060	3,521,224	6,029,921	66
67	Boiler and Plate Works	2)									67
68	Fabricated Structural Metal Industry	4)									68
69	Wire and Wire Products Manufacturers	3)									69
70	Heating Equipment Manufacturers	3)	713	49	762	3,463,989	139,871	6,768,656	5,398,618	12,307,145	70
71	Hardware, Tool and Cutlery Manufacturers	2)									71
72	Miscellaneous Metal Fabricating Industries	1)									72
73	MACHINERY INDUSTRIES (Except Electrical Machinery)	8	160	19	179	813,512	74,537	1,752,290	979,692	2,806,519	73
74	Agricultural Implement Industries	1)									74
75	Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	7)	160	19	179	813,512	74,537	1,752,290	979,692	2,806,519	75
76	TRANSPORTATION EQUIPMENT INDUSTRIES:	16	1,095	70	1,165	4,949,022	117,655	2,429,610	5,699,348	8,246,613	76
77	Truck Body and Trailer Manufacturers	6	57	2	59	202,976	6,055	287,848	247,594	541,497	77
78	Aircraft and Parts Manufacturers	7)									78
79	Motor Vehicle Parts and Accessories Manufacturers	2)	1,038	68	1,106	4,746,046	111,600	2,141,762	5,451,754	7,705,116	79
80	Railway Rolling Stock Industry	1)									80
81	PRODUCT INDUSTRIES: (5)										81
82	NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	28	833	60	893	4,388,147	1,062,762	8,990,334	15,888,275	25,941,371	82
83	Concrete Products Manufacturers	14	238	6	244	1,240,756	88,144	1,800,566	3,647,062	5,535,772	83
84	Clay Products Manufacturers	7	191	10	201	967,651	203,221	4,513,178	2,048,968	6,765,367	84
85	Cement Manufacturers	2)									85
86		1)									86
87		1)									87
88		1)	404	44	448	2,179,740	771,397	2,676,590	10,192,245	13,640,232	88
89		1)									89
90	General Products Industries, n.e.s.	1)									90



PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
EDMONTON - 1961 (Continued)

		Employees				Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production		
		Estab- lishments	Male	Female	Total				Net	Gross	
		No.	No.	No.	No.				\$	\$	
1	PETROLEUM AND COAL PRODUCTS INDUSTRIES:	5	695	33	728	4,322,393	905,125	45,119,318	15,718,164	61,742,607	1
2	Petroleum Refining	3)									2
3	Manufacturers of Lubricating Oils and Greases	1)	695	33	728	4,322,393	905,125	45,119,318	15,718,164	61,742,607	3
4	Miscellaneous Petroleum and Coal Products Industries, n.e.s.	1)									4
5	CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:	17	831	91	922	5,215,965	1,805,976	11,010,669	21,523,421	34,340,066	5
6	Manufacturers of Plastics and Synthetic Resins	4)									6
7	Manufacturers of Pharmaceuticals and Medicines	1)									7
8	Paint and Varnish Manufacturers	2)									8
9	Manufacturers of Soap and Cleaning Compounds	3)	831	91	922	5,215,965	1,805,976	11,010,669	21,523,421	34,340,066	9
10	Manufacturers of Industrial Chemicals	5)									10
11	Manufacturers of Printing Inks	1)									11
12	Miscellaneous Chemical Industries, n.e.s.	1)									12
13	MISCELLANEOUS MANUFACTURING INDUSTRIES:	71	565	230	795	3,131,378	158,060	5,327,917	5,637,645	11,123,622	13
14	Dental Laboratories	15	67	21	88	293,053	6,288	123,222	443,208	572,718	14
15	Ophthalmic Goods Manufacturers	3	16	1	17	52,126	2,230	117,619	154,117	273,966	15
16	Plastic Fabricators, n.e.s.	12	76	26	102	356,713	38,791	702,907	955,362	1,697,060	16
17	Signs and Displays	13	105	18	123	514,656	13,662	364,229	946,056	1,323,947	17
18	Candle Manufacturers	1)									18
19	Fur Dressing and Dyeing Manufacturers	1)									19
20	Instrument and Related Products Manufacturers	2)									20
21	Jewellery and Silverware Manufacturers	1)									21
22	Model and Pattern Manufacturers	1)									22
23	Orthopaedic and Surgical Appliance Manufacturers	1)									23
24	Stamp and Stencil (Rubber and Metal) Manufacturers	2)	301	164	465	1,914,830	97,089	4,019,940	3,138,902	7,255,931	24
25	Statuary Art Goods, Regalia and Novelties Manufacturers	1)									25
26	Venetian Blind Manufacturers	1)									26
27	Miscellaneous Industries, n.e.s.	1)									27
28	Rubber Industries	2)									28
29	Leather Industries	3)									29
30	Textile Industries	9)									30
31	Knitting Mills	1)									31
32	Electrical Products Industries	1)									32
GRAND TOTALS - EDMONTON		412	12,319	3,023	15,342	65,656,519	6,769,535	248,566,755	154,183,997	409,520,287	
(1)	Included in "Miscellaneous Manufacturing Industries".										
(2)	Included in "Miscellaneous Manufacturing Industries".										
(3)	Included in "Miscellaneous Manufacturing Industries".										
(4)	Included in "Miscellaneous Manufacturing Industries".										
(5)	Included in "Miscellaneous Manufacturing Industries".										

Table 9. PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
LETHBRIDGE - 1961

		Employees				Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production		
		Estab-lishments No.	Male No.	Female No.	Total No.				Net \$	Gross \$	
33	FOOD AND BEVERAGE INDUSTRIES:	20	612	190	802	2,882,504	312,099	21,402,643	12,337,620	34,052,362	33
34	Bakery Products Industries:										34
35	Bakeries	3	12	6	18	38,036	4,217	69,629	89,294	163,140	35
36	Beverage Manufacturers:										36
37	Soft drink manufacturers	3	14	5	19	61,304	11,733	142,245	265,904	419,882	37
38	Other Food Processors:										38
39	Breweries	1)									39
40	Butter and cheese plants	1)									40
41	Flour mills	1)									41
42	Fruit and vegetable canners and preservers	1)	519	160	679	2,503,482	272,164	20,917,256	11,575,571	33,348,013	42
43	Macaroni manufacturers	1)									43
44	Pasturizing plants	2)									44
45	Poultry processors	1)									45
46	Slaughtering and meat packing plants	3)									46
47	Vegetable oil mills	1)									47
48	FURNITURE AND FIXTURE INDUSTRIES:	7	21	1	22	77,660	1,676	68,393	101,094	171,163	48
49	Household Furniture Industry	7	21	1	22	77,660	1,676	68,393	101,094	171,163	49
50	METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	8	120	3	123	557,477	17,221	1,047,853	935,843	2,000,917	50
51	Machine Shops	3	27	-	27	113,800	2,980	53,364	167,961	224,305	51
52	Boiler and Plate Works	1)									52
53	Fabricated Structural Metal Industry	2)									53
54	Metal Stamping, Pressing and Coating Industry	1)	93	3	96	443,677	14,241	994,489	767,882	1,776,612	54
55	Miscellaneous Metal Fabricating Industries, n.e.s.	1)									55
56	MACHINERY INDUSTRIES: (Except Electrical Machinery)	3	33	1	34	131,690	4,000	339,013	207,690	550,703	56
57	Agricultural Implement Industry	2)	33	1	34	131,690	4,000	339,013	207,690	550,703	57
58	Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	1)									58
59	NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	7	86	8	94	377,243	77,404	635,211	489,358	1,201,973	59
60	Concrete Products Manufacturers	4	28	-	28	110,494	9,462	181,551	232,763	423,776	60
61	Ready-Mix Concrete Manufacturers	1)									61
62	Lime Manufacturers	1)	58	8	66	266,749	67,942	453,660	256,595	778,197	62
63	Miscellaneous Non-Metallic Mineral Products Industries, n.e.s.	1)									63
64	MISCELLANEOUS MANUFACTURING INDUSTRIES:	18	263	51	314	1,093,955	37,126	2,032,233	3,104,468	5,173,827	64
65	Textile Industries	1)									65
66	Knitting Mills	1)									66
67	Clothing Industries	1)									67
68	Printing, Publishing and Allied Industries	4)									68
69	Transportation Equipment Industries	2)	263	51	314	1,093,955	37,126	2,032,233	3,104,468	5,173,827	69
70	Electrical Products Industries	1)									70
71	Chemical and Chemical Products Industries	1)									71
72	Miscellaneous Manufacturing Industries, n.e.s.	4)									72
73	Wood Industries (Sash and Door and Planing Mills)	3)									73
GRAND TOTALS - LETHBRIDGE		63	1,135	254	1,389	5,120,529	449,526	25,525,346	17,176,073	43,150,945	

Table 10. PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
MEDICINE HAT - 1961

		Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production			
		Estab- lishments No.	Male No.	Female No.				Total No.	Net \$		Gross \$
1	FOOD AND BEVERAGE INDUSTRIES:	14	279	54	333	1,272,381	88,256	11,309,567	2,711,728	14,109,551	1
2	Bakery Products Industries:										2
3	Bakeries	4	14	12	26	78,321	2,896	96,816	132,896	232,608	3
4	Beverage Manufacturers:										4
5	Soft drink manufacturers	3	21	-	21	82,162	6,762	157,773	263,322	427,857	5
6	Other Food Processors:										6
7	Food manufacturers	1)									7
8	Flour mills	2)									8
9	Pasturizing plants	2)		42	286	1,111,898	78,598	11,054,978	2,315,510	13,449,086	9
10	Vegetable oil mills	1)									10
11	Miscellaneous food manufacturers, n.e.s.	1)									11
12	WOOD INDUSTRIES:	3	9	-	9	17,764	765	24,534	24,276	49,575	12
13	Sash and Door and Planing Mills	3	9	-	9	17,764	765	24,534	24,276	49,575	13
14	MISCELLANEOUS MANUFACTURING INDUSTRIES:	20	750	49	799	3,276,110	587,199	8,135,521	9,966,816	18,689,536	14
15	Rubber Industries	1)									15
16	Furniture and Fixture Industries	1)									16
17	Printing, Publishing and Allied Industries	3)									17
18	Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries)	6)	750	49	799	3,276,110	587,199	8,135,521	9,966,816	18,689,536	18
19	Non-Metallic Mineral Products Industries	6)									19
20	Petroleum and Coal Products Industries	1)									20
21	Chemical and Chemical Products Industries	1)									21
22	Miscellaneous Industries, n.e.s.	1)									22
GRAND TOTALS - MEDICINE HAT		37	1,038	103	1,141	4,566,255	676,220	19,469,622	12,702,820	32,848,662	

Table 11. PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
RED DEER - 1961

		Employees				Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials \$	Value of Production		
		Estab- lishments No.	Male No.	Female No.	Total No.				Net \$	Gross \$	
23	FOOD AND BEVERAGE INDUSTRIES:	13	162	58	220	687,485	105,094	4,868,545	2,817,737	7,791,376	23
24	Bakeries	4)									24
25	Breweries	2)									25
26	Butter and Cheese Plants	1)									26
27	Condenseries	1)									27
28	Slaughtering and Meat Packing Plants	1)	162	58	220	687,485	105,094	4,868,545	2,817,737	7,791,376	28
29	Pasturizing Plants	2)									29
30	Poultry Processors	1)									30
31	Soft Drink Manufacturers	1)									31
32	MISCELLANEOUS MANUFACTURING INDUSTRIES:	14	131	24	155	554,659	25,559	1,235,732	1,239,824	2,501,115	32
33	Wood Industries	3)									33
34	Printing, Publishing and Allied Industries	4)									34
35	Metal Fabricating Industries (Except Machinery and Transportation Industries)	1)									35
36	Machinery Industries	1)	131	24	155	554,659	25,559	1,235,732	1,239,824	2,501,115	36
37	Electrical Products Industries	1)									37
38	Non-Metallic Mineral Products Industries	2)									38
39	Miscellaneous Manufacturing Industries, n.e.s.	1)									39
40	Transportation Equipment Industries	1)									40
GRAND TOTALS - RED DEER		27	293	82	375	1,242,144	130,653	6,104,277	4,057,561	10,292,491	



Alberta's famed potatoes are processed in this plant at Taber.



Table 12. PRELIMINARY PRINCIPAL STATISTICS OF THE MANUFACTURING INDUSTRIES, BY CENSUS DIVISIONS  
ALBERTA - 1961

	Establishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials	Value of Production	
		Male	Female	TOTAL				Net	Gross
	No.	No.	No.	No.	\$	\$	\$	\$	\$
DIVISION No. 1									
Medicine Hat	37	1,038	103	1,141	4,566,255	676,220	19,469,622	12,702,820	32,848,662
Other	6	510	230	740	2,821,636	75,415	3,137,974	4,703,840	7,917,229
GRAND TOTAL	43	1,548	333	1,881	7,387,891	751,635	22,607,596	17,406,660	40,765,891
DIVISION No. 2									
Lethbridge	63	1,135	254	1,389	5,120,529	449,526	25,525,346	17,176,073	43,150,945
Brooks	5	30	17	47	130,098	23,755	669,302	211,321	904,378
Other	26	585	75	660	2,330,540	480,519	11,993,350	4,043,163	16,517,032
GRAND TOTAL	94	1,750	346	2,096	7,581,167	953,800	38,187,998	21,430,557	60,572,355
DIVISION No. 3									
Cardston	3	4	-	4	7,629	291	9,950	15,602	25,843
Fort MacLeod	4	11	6	17	46,830	3,211	96,047	63,918	163,176
Pincher Creek	4	11	4	15	46,294	4,137	157,054	80,971	242,162
Other	21	230	66	296	752,392	47,569	2,464,551	1,949,538	4,461,658
GRAND TOTAL	32	256	76	332	853,145	55,208	2,727,602	2,110,029	4,892,839
DIVISION No. 4									
Hanna	5	14	6	20	67,638	5,279	255,838	133,562	394,679
Other	2	2	1	3	6,069	145	4,800	7,605	12,550
GRAND TOTAL	7	16	7	23	73,707	5,424	260,638	141,167	407,229
DIVISION No. 5									
Drumheller	3	23	3	26	78,274	4,236	66,876	129,067	200,179
Linden	5	12	-	12	39,102	2,853	67,274	58,869	128,996
Three Hills	5	24	-	24	79,353	2,476	152,597	136,790	291,863
Vulcan	4	10	3	13	39,200	1,750	63,756	52,701	118,207
Other	8	14	2	16	40,011	6,733	206,374	70,521	283,628
GRAND TOTAL	25	83	8	91	275,940	18,048	556,877	447,948	1,022,873
DIVISION No. 6									
Calgary	360	9,403	1,637	11,040	46,618,956	3,773,578	181,828,169	96,559,006	282,160,753
Olds	5	16	5	21	52,831	7,535	330,416	145,809	483,760
Sundre	5	21	4	25	60,298	6,564	351,601	107,754	465,919
Other	33	121	28	149	534,779	79,550	3,913,712	1,486,540	5,479,802
GRAND TOTAL	403	9,561	1,674	11,235	47,266,864	3,867,227	186,423,898	98,299,109	288,590,234
DIVISION No. 7									
Stettler	10	33	9	42	140,048	10,510	443,159	239,445	693,114
Wainwright	3	10	4	14	44,822	3,698	96,827	91,723	192,248
Other	18	150	21	171	693,588	221,923	3,854,361	2,270,028	6,346,312
GRAND TOTAL	31	193	34	227	878,458	236,131	4,394,347	2,601,196	7,231,674
DIVISION No. 8									
Red Deer	27	293	82	375	1,242,144	130,653	6,104,277	4,057,561	10,292,491
Innisfail	7	44	9	53	202,935	54,156	1,298,464	621,939	1,974,559
Lacombe	5	25	6	31	105,158	6,484	406,227	174,385	587,096
Ponoka	9	36	6	42	119,096	12,073	607,862	234,031	853,966
Rocky Mountain House	5	33	9	42	131,492	15,246	748,443	574,436	1,338,125
Other	68	109	20	129	301,346	59,559	1,963,916	537,216	2,560,691
GRAND TOTAL	121	540	132	672	2,102,171	278,171	11,129,189	6,199,568	17,606,928
DIVISION No. 9									
Banff	4	12	11	23	66,483	4,126	95,760	117,352	217,238
Other	76	557	57	614	1,902,581	853,959	2,864,856	4,092,711	7,811,526
GRAND TOTAL	80	569	68	637	1,969,064	858,085	2,960,616	4,210,063	8,028,764
DIVISION No. 10									
GRAND TOTAL	59	592	59	651	2,591,900	878,017	17,630,850	10,404,878	28,913,745
DIVISION No. 11									
Edmonton	412	12,319	3,023	15,342	65,656,519	6,769,535	248,566,755	154,183,997	409,520,287
Wetaskiwin	11	57	23	80	250,034	12,558	1,853,441	309,769	2,175,768
Morinville	3	6	1	7	16,144	790	27,000	26,639	54,429
Stony Plain	4	6	2	8	18,398	960	45,970	26,731	73,661
Other	42	733	32	765	3,944,641	636,212	14,921,556	10,585,189	26,142,957
GRAND TOTAL	472	13,121	3,081	16,202	69,885,736	7,420,055	265,414,722	165,132,325	437,967,102
DIVISION No. 12									
St. Paul	6	26	10	36	100,120	9,337	584,870	181,878	776,085
Other	27	61	14	75	162,241	30,206	1,307,394	295,165	1,632,765
GRAND TOTAL	33	87	24	111	262,361	39,543	1,892,264	477,043	2,408,850
DIVISION No. 13									
Athabasca	5	48	9	57	112,468	8,568	500,391	320,740	829,699
Onoway	3	45	3	48	96,017	24,607	562,454	12,524	599,585
Other	73	211	19	230	636,723	56,418	3,667,109	898,431	4,621,958
GRAND TOTAL	81	304	31	335	845,208	89,593	4,729,954	1,231,695	6,051,242
DIVISION No. 14									
Edson	3	28	9	37	87,113	4,363	161,754	53,959	220,076
Other	51	661	33	694	3,412,059	1,251,848	12,126,130	12,456,238	25,834,216
GRAND TOTAL	54	689	42	731	3,499,172	1,256,211	12,287,884	12,510,197	26,054,292
DIVISION No. 15									
Grande Prairie	19	382	61	443	1,465,042	200,960	3,900,315	3,441,102	7,542,377
Peace River	5	25	10	35	106,810	13,594	406,716	252,842	673,152
Other	93	1,020	11	1,031	2,369,698	266,967	6,296,039	4,048,405	10,611,411
GRAND TOTAL	117	1,427	82	1,509	3,941,550	481,521	10,603,070	7,742,349	18,826,940

Table 13. MANUFACTURING INDUSTRIES OF ALBERTA - 1952, 1957 AND 1961, GROUPED ACCORDING TO NUMBER OF EMPLOYEES PER FIRM, SALARIES AND WAGES PAID PER FIRM, AND NET AND GROSS VALUE OF PRODUCTION PER FIRM

EXCLUSIVE OF SAWMILLING FIRMS

INDUSTRY

	FOODS AND BEVERAGES	RUBBER PRODUCTS		LEATHER PRODUCTS		TEXTILE INDUSTRIES		KNITTING MILLS		CLOTHING INDUSTRIES		WOOD INDUSTRIES		FURNITURE AND FIXTURE INDUSTRIES		PAPER AND ALLIED INDUSTRIES		PRINTING AND PUBLISHING AND ALLIED INDUSTRIES														
		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS														
		1952	1957	1961	1952	1957	1961	1952	1957	1961	1952	1957	1961	1952	1957	1961	1952	1957	1961													
NUMBER OF EMPLOYEES PER FIRM																																
1	0 - 5	206	224	194	-	1	9	5	3	5	5	8	-	-	-	12	14	4	113	118	50	-	-	46	3	1	2	180	79	77		
2	6 - 15	92	113	121	-	1	3	1	3	3	2	5	-	-	3	5	6	3	37	34	30	-	-	14	1	4	0	36	49	57		
3	16 - 25	23	25	22	-	-	-	-	-	-	-	2	-	-	-	-	5	4	14	19	9	-	-	-	-	2	3	6	8	11		
4	26 - 50	19	25	22	-	-	-	1	1	3	2	1	-	-	-	-	7	4	16	16	12	-	-	-	2	1	1	5	7	12	19	
5	51 - 100	19	19	24	-	-	-	-	-	2	1	-	-	-	-	-	2	1	12	10	6	-	-	-	2	1	7	5	3	4	5	
6	101 - 200	18	16	12	-	-	-	-	-	-	1	-	-	-	-	-	1	2	5	7	5	-	-	-	1	1	-	1	1	2	2	
7	201 - 500	6	10	8	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	3	-	-	-	-	-	1	-	2	2	2	-	
8	501 - 1,000	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-	
9	1,001 - OVER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
TOTAL		386	435	405	-	-	4	12	8	8	13	14	17	-	-	3	30	34	18	197	208	112	-	-	69	7	16	22	235	155	163	
SALARIES AND WAGES PAID BY FIRM																																
1	0 - 7,500	156	148	102	-	-	1	8	4	2	5	5	4	-	-	-	8	10	3	95	90	33	-	-	33	3	1	1	143	36	31	
2	7,501 - 30,000	133	165	172	-	-	1	4	1	2	3	1	6	-	-	2	8	10	4	48	55	32	-	-	20	-	2	3	59	68	69	
3	30,001 - 50,000	24	28	35	-	-	-	-	-	-	2	2	3	-	-	1	6	5	5	17	18	18	-	-	5	-	1	3	12	19	29	
4	50,001 - 75,000	13	21	22	-	-	-	-	1	1	2	3	2	-	-	-	4	3	2	9	5	4	-	-	2	1	2	3	8	12	9	
5	75,001 - 100,000	8	11	12	-	-	-	-	-	-	1	1	1	-	-	-	3	1	2	7	7	4	-	-	-	2	1	-	5	4	6	
6	100,001 - 150,000	10	13	11	-	-	-	-	-	-	-	-	1	-	-	-	-	2	3	9	11	10	-	-	-	3	2	1	1	3	7	9
7	150,001 - 200,000	7	6	11	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	5	3	1	-	-	-	1	1	1	1	1	3	2
8	200,001 - 500,000	22	27	26	-	-	1	-	-	-	-	-	1	-	-	-	-	2	7	14	9	-	-	-	-	2	-	7	8	2	3	5
9	500,001 - OVER	13	16	14	-	-	1	-	-	-	-	-	-	-	-	-	1	1	1	-	5	1	-	-	-	1	1	1	2	3	3	
TOTAL		386	435	405	-	-	4	12	8	8	13	14	17	-	-	3	30	34	18	197	208	112	-	-	69	7	16	22	235	155	163	
NET VALUE OF PRODUCTION PER FIRM																																
1	0 - 5,000	88	70	33	-	-	-	6	3	2	4	5	2	-	-	-	2	5	1	57	63	17	-	-	20	-	1	1	96	17	15	
2	5,001 - 25,000	138	164	149	-	-	1	4	3	-	2	1	6	-	-	1	11	11	4	65	67	39	-	-	23	3	1	2	80	57	54	
3	25,001 - 50,000	51	69	73	-	-	-	2	2	3	4	2	2	-	-	2	4	4	2	26	22	18	-	-	13	-	1	-	28	33	33	
4	50,001 - 100,000	30	36	81	-	-	2	-	-	-	2	1	2	-	-	-	6	7	2	15	15	7	-	-	-	-	3	3	15	22	33	
5	100,001 - 250,000	30	33	-	-	-	-	-	-	1	1	4	4	-	-	-	6	4	6	22	18	15	-	-	6	-	-	6	11	16	17	
6	250,001 - 500,000	16	20	24	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	6	12	7	-	-	2	1	5	7	1	6	6	
7	500,001 - 1,000,000	16	19	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	6	5	8	-	-	1	3	4	-	2	1	2	2
8	1,000,001 - OVER	17	24	24	-	-	1	-	-	-	-	-	1	1	-	-	1	1	1	-	6	1	-	-	-	1	1	3	2	3	3	
TOTAL		386	435	405	-	-	4	12	8	8	13	14	17	-	-	3	30	34	18	197	208	112	-	-	69	7	16	22	235	155	163	
GROSS VALUE OF PRODUCTION PER FIRM																																
1	0 - 5,000	30	33	16	-	-	-	5	1	2	3	3	2	-	-	-	2	3	1	38	36	8	-	-	11	-	-	-	86	9	7	
2	5,001 - 25,000	84	75	60	-	-	1	3	4	-	2	3	2	-	-	-	8	9	3	52	56	31	-	-	24	1	2	1	66	43	39	
3	25,001 - 50,000	46	58	59	-	-	-	3	2	4	1	2	-	-	-	1	3	5	2	17	29	10	-	-	14	1	-	2	40	41	38	
4	50,001 - 100,000	48	60	55	-	-	-	-	-	-	2	2	5	-	-	-	2	2	1	27	27	18	-	-	11	-	-	4	20	23	62	
5	100,001 - 250,000	80	83	75	-	-	1	-	1	-	3	2	5	-	-	-	12	11	4	29	16	14	-	-	-	-	3	-	1	26	-	
6	250,001 - 500,000	34	48	46	-	-	-	-	-	-	-	1	4	-	-	-	1	1	4	15	17	15	-	-	-	-	4	2	6	9	9	
7	500,001 - 1,000,000	23	27	38	-	-	-	-	-	-	-	1	2	1	-	-	-	1	1	11	12	8	-	-	5	1	2	2	-	4	4	-
8	1,000,001 - 10,000,000	36	44	48	-	-	2	-	-	-	-	-	2	-	-	-	-	1	2	8	15	8	-	-	-	-	3	8	8	-	3	-
9	10,000,001 - OVER	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
TOTAL		386	435	405	-	-	4	12	8	8	13	14	17	-	-	3	30	34	18	197	208	112	-	-	69	7	16	22	235	155	163	

PRIOR TO 1961 THE 'WOOD INDUSTRIES' AND THE 'FURNITURE AND FIXTURES INDUSTRIES' WERE COMBINED.



MANUFACTURING INDUSTRIES OF ALBERTA - 1952, 1957 AND 1961, GROUPED ACCORDING TO NUMBER OF EMPLOYEES PER FIRM,  
SALARIES AND WAGES PAID PER FIRM, AND NET AND GROSS VALUE OF PRODUCTION PER FIRM  
EXCLUSIVE OF SAWMILLING FIRMS (CONTINUED)

INDUSTRY

NUMBER OF EMPLOYEES PER FIRM	PRIMARY METAL INDUSTRIES *		METAL FABRICATING INDUSTRIES *		MACHINERY *		TRANS- PORTATION EQUIPMENT INDUSTRIES *		ELECTRICAL PRODUCTS INDUSTRIES		NON-METALLIC MINERAL PRODUCTS INDUSTRIES		PETROLEUM AND COAL PRODUCTS INDUSTRIES		CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES		MISCELLANEOUS MANUFACTURING INDUSTRIES		TOTAL - ALL MANUFACTURING INDUSTRIES	
	NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS		NO. FIRMS	
	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961	1952	1957 1961
1 0 - 5	7	6 5	-	- 58	61 61 8	8 5 10	2 4 4	32 21 17	8 4 4	16 11 18	24 28 70	686 586 579	1							
2 6 - 15	-	4 7	-	- 39	31 44 4	4 2 5	-	1 9 14 32	1 5 5	5 13 8	9 14 27	236 305 371	2							
3 16 - 25	-	1	-	- 20	14 18 4	3 4 5	-	3 7 10 9	-	4 2	3 4 5	81 105 98	3							
4 26 - 50	1	2 1	-	- 16	17 19 2	1 4 8	-	2 3 10 15 15	4 4 5	1 1 2 3	4 3 5	89 114 113	4							
5 51 - 100	-	4	-	- 10	14 17 1	1 2 1	-	1 1 8 6 9	2 5	1 2 3	-	63 75 71	5							
6 101 - 200	-	2	-	- 3	2 4 1	-	-	3 3 6 3	4 3	2	-	33 39 42	6							
7 201 - 500	-	1	-	- 1	3 3	-	-	1 1 1	2 2	1 4 4	-	17 25 21	7							
8 501 - 1,000	-	1	-	-	-	-	-	1 1	-	-	-	5 10 7	8							
9 1,001 - OVER	-	-	-	-	-	-	-	-	-	-	-	1 2	9							
TOTAL	8	14 21	-	- 147	142 166 20	21 21 34	2 10 9	70 71 89	20 25 19	28 35 35	40 49 107	1211 1261 1302								

SALARIES AND WAGES PAID BY FIRM \$													
1 0 - 7,500	4	4 2	40 27 26	-	- 3	6 5 2	2 1 4	22 14 9	6 3 1	14 8 5	21 18 37	531 375 296	1
2 7,501 - 30,000	3	6 7	39 47 45	-	- 5	5 - 11	1 1 4	17 12 19	3 3 6	5 10 16	12 21 47	340 402 471	2
3 30,001 - 50,000	-	1 1	16 20 13	-	- 4	2 1 2	1 1 1	7 9 15	- 2 1	2 5 3	1 2 11	90 115 147	3
4 50,001 - 75,000	-	-	8 21 16	-	- 2	1 5 1	-	5 7 11	1 1 1	4 3 1	2 3 4	58 90 83	4
5 75,001 - 100,000	-	6	10 9 12	-	- 1	2 1 6	-	1 5 2	-	3 1	- 5	39 40 61	5
6 100,001 - 150,000	1	2 3	8 16 10	-	- 3	- 3 4	-	9 7 10	3 1	1 1 2	3 4	49 69 72	6
7 150,001 - 200,000	-	-	12 4 7	-	-	1 - 2	-	2 7 6	1 2	- 1	- 3	29 30 36	7
8 200,001 - 500,000	-	-	5 15 14	-	- 1	- 2 1	-	6 7 11	3 8 5	1 1 -	-	46 87 86	8
9 500,001 - OVER	-	1 -	4 7 4	-	- 1	4 4 5	-	1 3 6	3 5 5	1 6 7	-	29 53 50	9
TOTAL	8	14 21	142 166 147	-	- 20	21 21 34	2 10 9	70 71 89	20 25 19	28 35 35	40 49 107	1211 1261 1302	
NET VALUE OF PRODUCTION PER FIRM \$													
1 0 - 5,000	2	4 1	18 13 7	-	- 2	3 3 -	1 1 3	13 7 3	2 - 1	7 6 1	9 10 19	307 208 126	1
2 5,001 - 25,000	5	2 5	49 45 34	-	- 4	6 2 9	1 3 3	16 7 11	3 3 1	7 3 8	19 18 45	409 387 399	2
3 25,001 - 50,000	-	4 -	18 20 13	-	- 4	1 1 4	-	9 6 11	2 1 3	3 6 7	3 9 17	151 180 221	3
4 50,001 - 100,000	-	1 4	14 28 26	-	- 2	3 4 4	1 1 1	6 21 20	- 1 3	2 5 2	3 4 13	97 149 210	4
5 100,001 - 250,000	-	2 2	24 30 24	-	- 4	3 5 11	-	11 11 20	1 2 2	4 5 6	6 5 8	119 138 132	5
6 250,001 - 500,000	1	- 3	13 18 12	-	- 2	1 1 2	-	10 7 8	2 4 4	3 2 1	- 3 5	54 81 81	6
7 500,001 - 1,000,000	-	- 1	3 4 13	-	- 2	1 1 1	-	3 6 6	4 4 2	1 3 2	-	39 47 61	7
8 1,000,001 - OVER	-	1 5	3 8 2	-	-	3 4 4	-	2 6 10	6 10 7	1 5 8	-	35 71 72	8
TOTAL	8	14 21	142 166 147	-	- 20	21 21 34	2 10 9	70 71 89	20 25 19	28 35 35	40 49 107	1211 1261 1302	
GROSS VALUE OF PRODUCTION PER FIRM \$													
1 0 - 5,000	2	2 -	9 6 2	-	-	2 3 -	-	10 6 1	5 1 -	5 2 8	7 4 9	204 109 67	1
2 5,001 - 25,000	4	3 3	41 35 29	-	- 4	5 2 9	-	15 5 9	- 1 1	7 5 -	17 17 43	305 262 260	2
3 25,001 - 50,000	1	1 1	21 20 18	-	- 1	2 - 1	1 1 1	10 3 8	- - 1	2 3 -	4 9 22	150 171 184	3
4 50,001 - 100,000	-	5 5	17 22 26	-	- 9	2 1 5	-	5 11 34	2 2 4	3 3 8	4 9 16	156 169 266	4
5 100,001 - 250,000	-	- 1	22 33 32	-	-	6 8 1	-	12 17 -	1 2 1	4 8 3	6 5 10	175 213 156	5
6 250,001 - 500,000	-	- 1	20 20 14	-	- 2	3 1 1	1 1 2	8 9 10	- 4 1	4 5 5	2 4 4	84 120 120	6
7 500,001 - 1,000,000	1	2 2	9 13 8	-	- 2	2 5 5	-	5 8 10	2 -	- 2 2	- 1 3	55 78 92	7
8 1,000,001 - 10,000,000	-	- 4	6 16 18	-	-	2 4 3	-	5 12 17	7 10 6	3 7 7	-	74 124 137	8
9 10,000,001 - OVER	-	1 3	- 1 -	-	-	- 1 1	-	-	3 5 5	- 2	-	8 15 20	9
TOTAL	8	14 21	142 166 147	-	- 20	21 21 34	2 10 9	70 71 89	20 25 19	28 35 35	40 49 107	1211 1261 1302	

\* SINCE 1957 THE PRIMARY METAL, METAL FABRICATING, MACHINERY AND TRANSPORTATION EQUIPMENT INDUSTRIES HAVE BEEN RECLASSIFIED, MAKING DIRECT COMPARISONS IMPOSSIBLE.

TABLE 14. MINERAL PRODUCTION, ALBERTA, 1947-1962  
QUANTITY AND VALUE

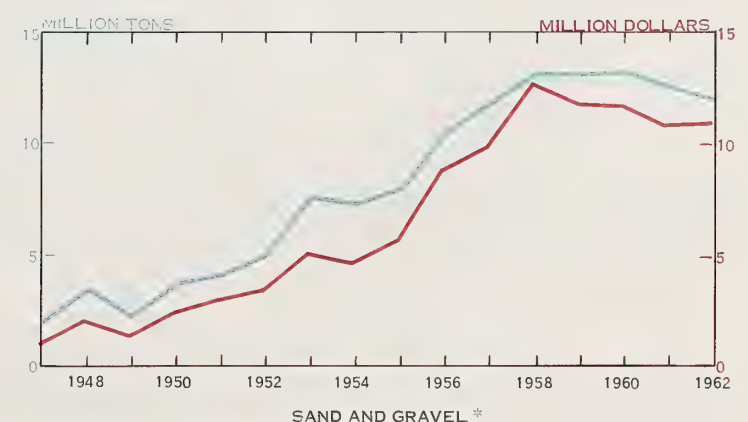
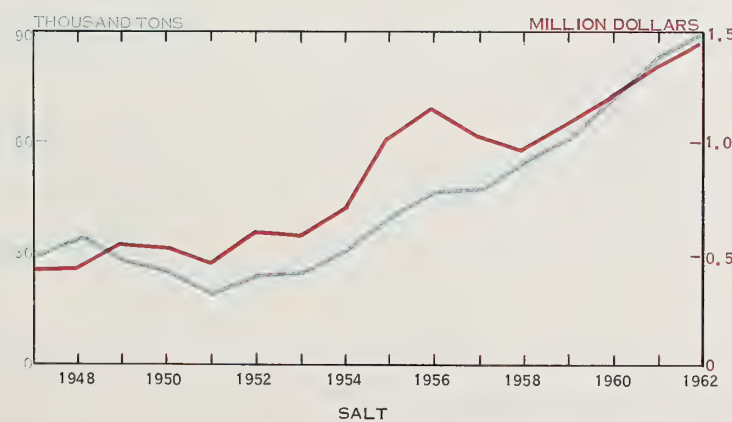
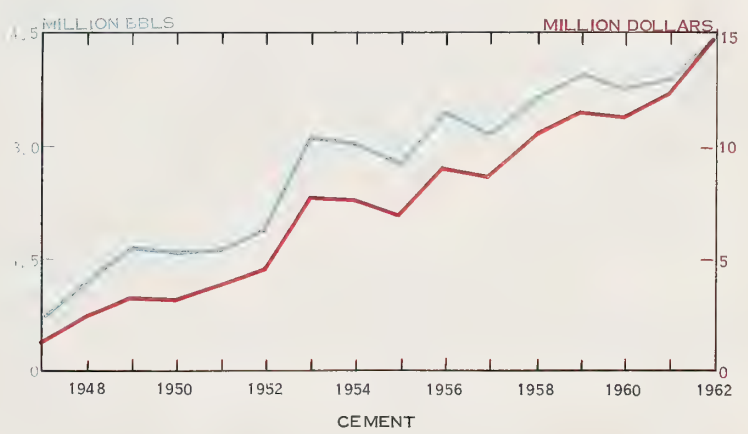
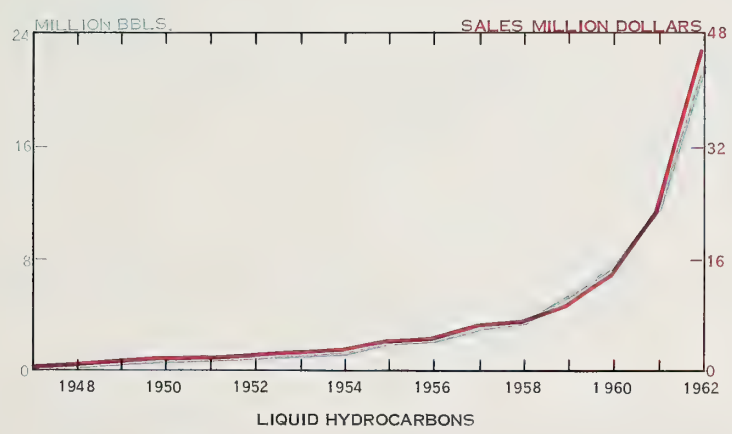
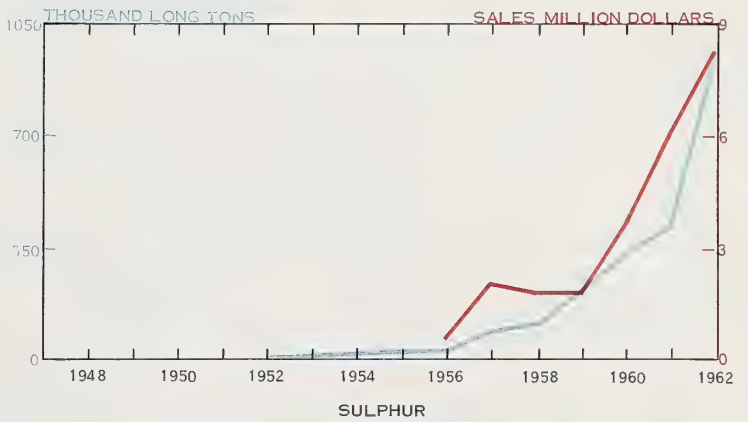
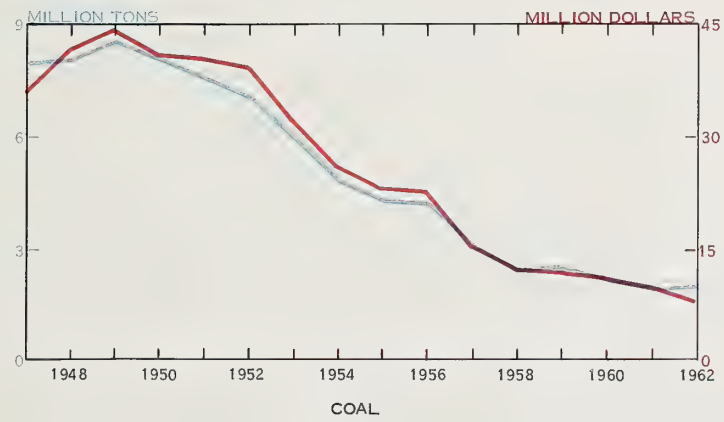
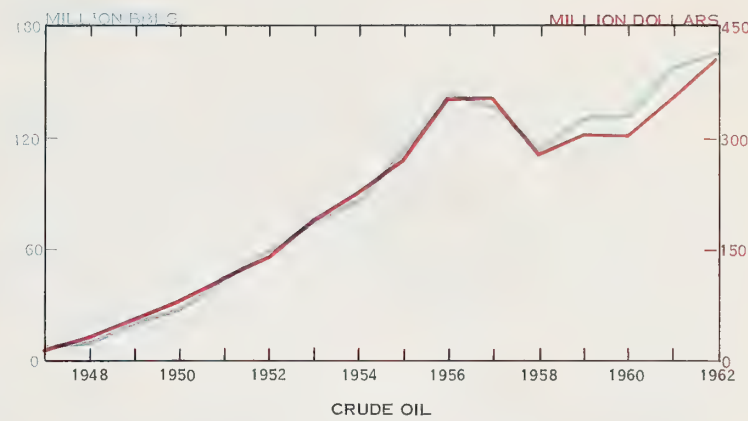
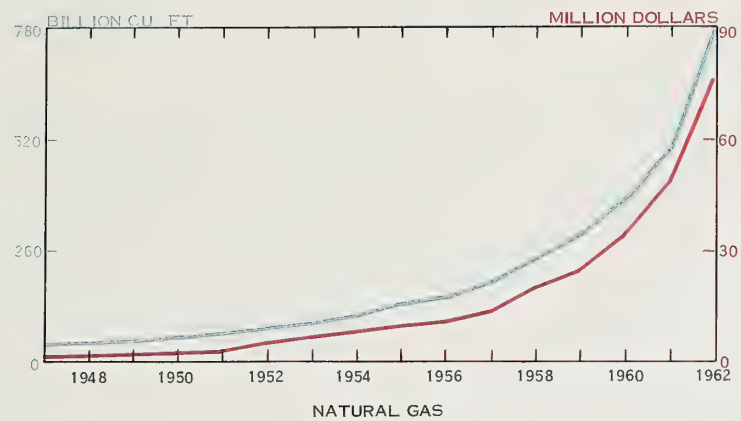
	1947	1949	1951	1953	1956	1957	1958	1959	1960	1961	1962	1963
NATURAL GAS	8,070,430 36,439,158	8,616,855 44,644,153	7,659,329 40,981,581	5,917,474 32,110,429	4,328,787 23,274,012	3,156,546 17,383,547	2,519,901 12,807,276	2,528,755 12,756,112	2,391,699 11,516,842	2,027,320 10,472,978	2,087,310 9,969,608	2,240,427 9,553,992
NATURAL GAS BY-PRODUCTS	44,106,643 7,745,886	51,179,779 2,558,989	69,876,831 3,493,842	89,651,605 6,723,870	146,133,893 10,960,042	183,140,820 13,735,562	239,049,591 20,080,166	297,568,926 24,995,790	383,682,986 34,118,675	500,843,900 48,882,345	770,963,122 88,660,759	895,000,000 89,050,000
PETROLEUM CRUDE	6,770,477 18,078,907	20,087,418 58,999,936	45,915,384 113,870,152	76,816,383 193,761,644	143,909,641 353,629,158	137,492,316 355,555,140	113,277,847 283,262,592	129,967,312 306,917,803	130,506,968 302,841,423	157,811,712 355,530,845	165,124,967 379,830,363	171,400,000 428,500,000
CLAY PRODUCTS	1,771,250	1,603,199	1,787,731	2,135,085	3,038,544	2,628,187	2,569,170	3,572,920	3,551,682	3,517,473	3,445,687	3,074,533
CEMENT	737,551 1,491,510	1,659,503 3,456,141	1,649,909 3,898,043	3,098,664 7,915,227	3,440,931 9,258,016	3,182,640 8,802,914	3,631,520 10,676,668	3,942,023 11,678,577	3,793,463 11,474,865	3,873,794 12,420,025	4,565,886 14,780,423	4,138,509 13,684,000
LIME	25,733 235,509	27,071 295,441	30,670 395,452	29,263 430,924	41,309 624,060	42,223 678,237	47,112 767,612	43,709 741,837	43,731 756,499	47,506 838,365	48,138 842,615	50,610 889,175
SAND AND GRAVEL	2,058,142 1,170,883	2,448,814 1,553,589	4,289,021 3,194,446	7,651,261 5,097,720	10,522,441 8,877,806	11,801,422 9,981,716	13,226,668 12,717,750	13,271,695 11,949,099	13,385,970 11,858,520	12,591,944 10,927,057	13,469,848 12,644,098	15,937,485 13,627,207
STONE	13,883 57,600	13,632 55,025	13,310 46,820	18,833 84,639	66,820 343,166	80,565 394,123	91,882 249,668	528,961 662,915	167,201 310,427	96,753 337,150	105,695 368,608	109,042 337,914
METALS												
GOLD	78 2,730	115 4,140	97 3,574	65 2,237	119 4,100	416 13,957	282 9,582	200 6,714	191 6,484	171 6,064	186 6,958	111 4,567
SILVER	16 12	11 8	9 8	6 5	14 12	39 34	28 24	19 17	19 17	17 16	17 20	11 15
NON-METALLICS												
QUARTZ	-	700 10,500	-	-	-	-	-	-	-	-	-	-
SALT	29,698 438,825	28,359 547,304	19,718 472,562	24,885 601,515	46,654 1,162,982	46,935 1,038,346	55,766 983,640	61,198 1,092,331	72,431 1,206,433	83,880 1,355,074	90,729 1,454,462	93,600 1,468,900
SULPHUR, ELEMENTAL	-	-	-	-	-	-	1,815,100	1,841,478	3,650,145	6,133,261	8,308,209	11,371,500
TOTAL VALUE	67,432,270	113,728,425	168,144,211	248,863,295	411,171,898	410,211,763	345,939,248	376,215,593	395,344,010	473,480,540	566,502,703	635,001,853

\* SAND AND GRAVEL ARE NOT LEGALLY MINERALS IN ALBERTA BUT ARE PART OF THE SURFACE IN ACCORDANCE WITH THE SAND AND GRAVEL ACT, 1951.

+ PRELIMINARY



MINERAL PRODUCTION AND VALUE, ALBERTA, 1947-1962



\* SAND AND GRAVEL ARE NOT LEGALLY MINERALS IN ALBERTA

## INDUSTRIAL MINERALS

Industrial minerals and rocks are mostly solid non-metallic materials used in industries such as those producing building materials, refractories, ceramics, paints, fertilizers, and various inorganic chemicals. Industrial minerals are an integral part of an industrialized country: their value in such a country may exceed that of metallic minerals. With the rapid expansion of the petroleum industry in Alberta after 1947, the demand for industrial minerals increased. Their value in Alberta rose from \$ 1 million in 1936, to \$ 5 million in 1946, to \$ 23 million in 1957, to \$ 40 million in 1962, figures representing 3.7 per cent, 5.0 per cent, 5.7 per cent, and 6.9 per cent respectively of the total mineral production.

Alberta industrial minerals are typical of a geological terrain containing thick sequences of quartzite, limestone, dolomite, evaporite beds, sandstone, and shale. Some are by-products of the oil and gas industry. Because of the comparatively low value per unit weight or volume, most deposits of industrial minerals to be profitably exploited must be close to cheap transportation, and to existing and potential markets. For industrial minerals, such as bentonite, pumicite and other abrasives, and clays and shales used in the manufacture of brick, tile, stoneware, and lightweight aggregate, the physical conditions and characteristics are of utmost importance; the chemical composition being of little use.

The relatively low costs of stripping or quarrying makes these attractive methods of obtaining some industrial minerals. In stripping or quarrying operations, the dip of the beds with respect to local topography and the depth of overburden are important. In Alberta, strata on the plains lie flat or nearly so; in the foothills and mountains moderate to steep dips are common. The production of industrial minerals, obtained by quarrying, stripping, or from wells, will continue to increase with the industrialization of Alberta.

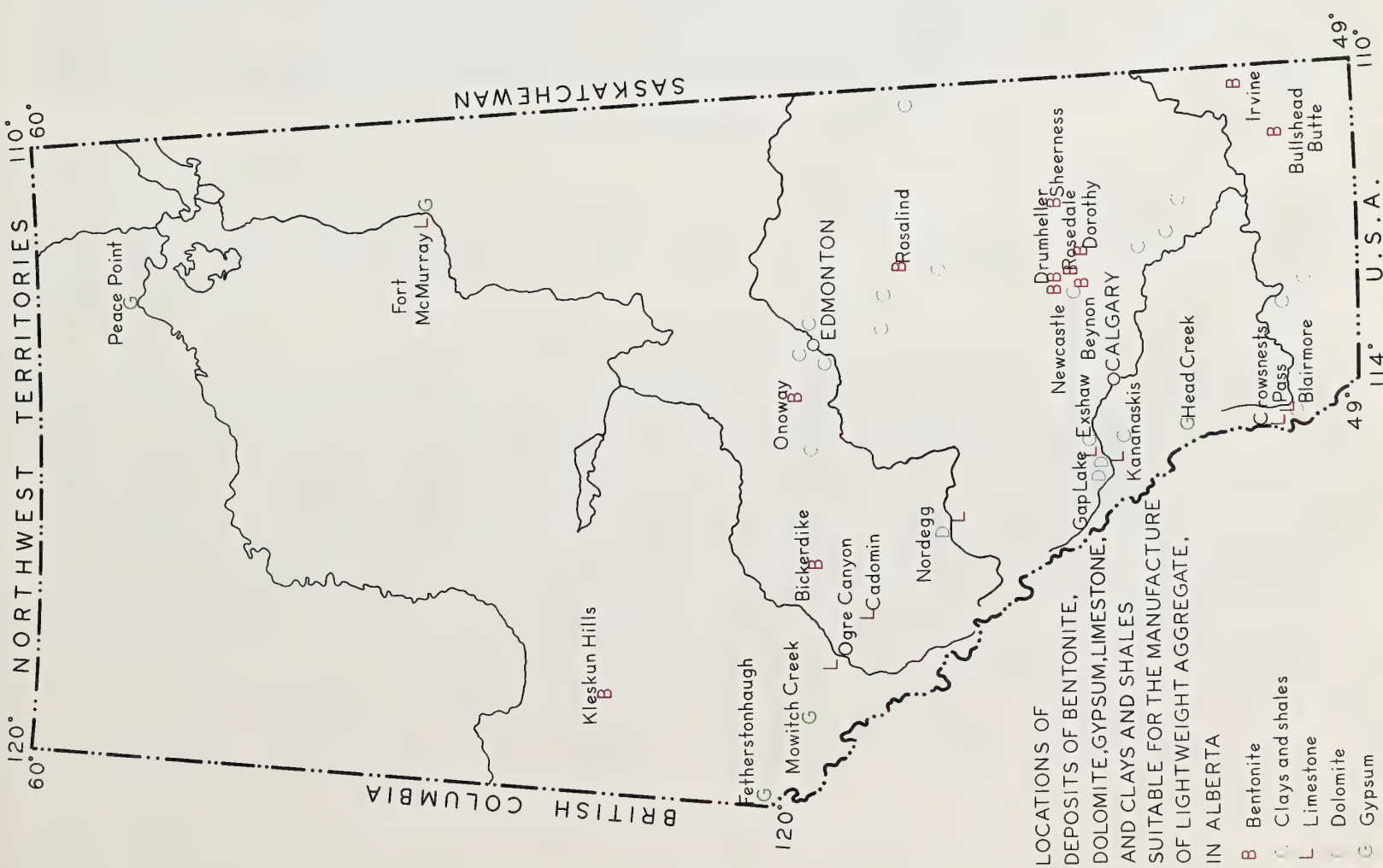
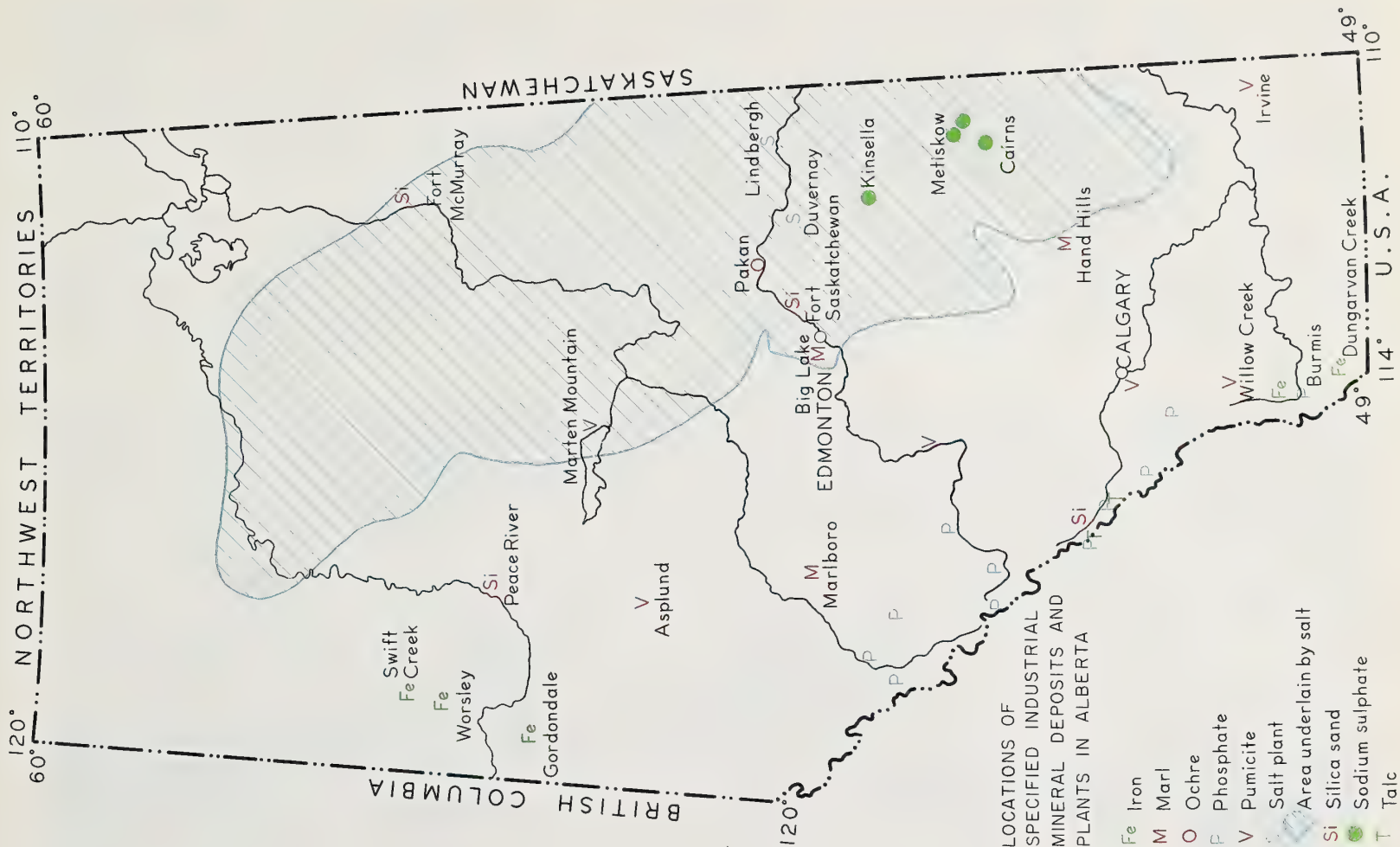
### ABRASIVES

Abrasives are used to cut, grind, polish, abrade, scour, or clean, by removing solid material by rubbing or impact. Specifications depend on the particular abrasive material and its use.

In Alberta, sand for sand blasting is obtained from local deposits of river, beach, or dune sand. Other Alberta natural materials which might be potential abrasives are garnet, feldspar, pumicite, and pebbles. Garnet is common in the glacial deposits throughout Alberta and has been concentrated in alluvial gravels particularly in some parts of the South Saskatchewan and Milk Rivers, but data on the concentrations or abrasive quality of this garnet are not available. Some glacial and alluvial sands might be sources of feldspar should a demand for it arise. Deposits of pumicite, which is used as an abrasive mostly in cleaning and scouring compounds, are widespread in Alberta. Some information on these deposits is given in the section on cement.

Quartzite pebbles derived from the Cypress Hills conglomerate and washed into stream beds along the northern flank of the Cypress Hills, have been used in ball mills in British Columbia. Tests show them to be comparable in quality to commercially used Danish flint pebbles. Quartzite pebbles derived from the same source—quartzite formations in the Rocky Mountains—and transported by the same agent, rivers, have been deposited in present-day river beds. Gravel from many places in river beds contains more than 80 per cent quartzite pebbles in the fraction greater than 8 mill-





imetres. Some gravels from the North Saskatchewan River between Genesee and Drayton Valley, and from the Athabasca River at Fort Assinboine and Whitecourt contain more than 90 per cent quartzite pebbles in the same fraction. The color of these pebbles ranges from white through buff to brown. Some when crushed might be suitable for use in facings such as terrazzo.

BENTONITE

Bentonite is very fine grained and is composed essentially of members of the montmorillonite group of clay minerals. Most of it has been derived by natural alteration of volcanic ash. It has a high capacity for base exchange, the exchangeable

Table 15. BENTONITE DEPOSITS OF ALBERTA

Location	Geological Formation or Group	Thickness (feet)	Yield (barrels per ton)	Sand or Silt Content (per cent)	Remarks
Along Rosebud River near Beynon SE 32-27-20-4	Edmonton	3 1/2	51	0.2	Extent unknown; below 2 1/2-foot coal seam.
Along McLeod River 200 yards upstream from CNR bridge near Bickerdike 6-52-18-5	Saunders	6-8	low	--	Inferior decolorizing properties; a small quantity used for cosmetics in the past; under heavy overburden.
In Red Deer River valley near Dorothy	upper part of Bearpaw	20	30	--	Exposed for several miles under low overburden.
Ridge 1 1/2 miles north of Drumheller NW 14-29-20-4	Edmonton	3	56	2.3	Mined intermittently for a number of years; an untreated sample had decolorizing ability 60% of that of commercial Floridin clay.
North flank of Kleskun Hills SE 27-72-4-6	Wapiti	4	40-60	--	Small lenses of limited extent.
Near Irvine NW 30-11-2-4	100 feet from base of Bearpaw	1-5	38	--	Surrounds Cypress Hills on north and west; under 5-10 feet of overburden.
Bullshead Butte NE 2-8-7-4	Bearpaw	2	58	--	Small deposit; under 10-15 feet of overburden.
Newcastle SE 9-29-20-4	Edmonton	5-10	42-66	4-12	Under light overburden.
Aetna coal mine at Rosedale	Edmonton	0.5-0.7	90	trace	As parting in No. 1 coal seam.
Sheerness	Edmonton	1-5	43-58	0.5-1.7	In overburden above coal seam being stripmined; brown bentonite overlies olive green.

ions being either calcium or sodium. Bentonites with sodium as the exchangeable ion are used to control the viscosity of drilling mud, whereas those with calcium are used as decolorizing and clarifying agents in oil refining. Other uses are as a bonding agent for foundry sand and some types of ore pellets, as a catalyst in the refining of oil, as a carrier for insecticides, as a detergent in cleaners, as a filler in paper and products, in some cosmetics, to prevent leaks in the bottoms of ponds and irrigation canals, and recently as an aerial bomb in fighting forest fires. Most bentonite in Canada is used in drilling mud with lesser amounts in iron and steel foundries and for pelletizing ores. Canadian demand for pelletizing grades of bentonite is increasing.

Swelling bentonite is produced from two deposits in the Edmonton Formation in Alberta, one near Rosalind, the other near Onoway. Near Rosalind, beds of green



and grey bentonite totalling 9 feet thick and beneath 14 to 19 feet of overburden are being mined. The green bentonite has a yield of 80 to 85 barrels to the ton, and the grey, 60 to 65 barrels per ton. These bentonites contain about 0.5 per cent sand and silt. Near Onoway, a bentonite deposit 3 to 30 feet thick, beneath 10 to 50 feet of overburden, consists of interbedded pure and contaminated bentonite. The yield ranges generally from 40 to 60 barrels per ton but small amounts have yields up to 115 barrels per ton. Data on some other deposits of bentonite are given in Table 15 on the preceeding page. Although bentonite deposits are widespread in Cretaceous and Tertiary strata in Alberta, particularly in the Upper Cretaceous Edmonton and Bearpaw Formations, most have calcium as the dominant exchangeable ion, and hence are not very suitable for use in drilling mud without prior treatment.



*Camping trailers made near Edmonton are increasingly popular.*

## CEMENT

Hydraulic cements have the property of hardening under water. They can be divided into several types of which only portland, masonry, and pozzolan are mentioned here.

Portland cement is produced by burning a finely ground mixture, which after burning contains 65 to 70 per cent lime, about 20 per cent silica, about 10 per cent alumina and ferric oxide, and several per cent magnesia, alkalis, and sulfate. The resulting clinker is reground and gypsum added. Portland cement is used in concrete for general construction purposes, special types being required for features such as high early strength, low heat of hydration, sulfate resistance, and use under high temperature and pressure. Masonry cements are mixtures of portland cement, finely ground limestone, and a plasticizer, and are used as mortar for brick laying or other masonry work.

Pozzolans are siliceous, or siliceous and aluminous, materials which when



in finely divided form and in the presence of moisture react with calcium hydroxide at ordinary temperatures to form cementitious compounds. Finely divided pozzolans are mostly blended with portland cement so that the pozzolan combines with calcium hydroxide liberated during hydration of the cement. When properly used in concrete, pozzolans can retard or prevent alkali-aggregate reaction, increase resistance to sulfate-carrying waters, reduce heat generation in massive structures, increase tensile strength, reduce permeability, and improve workability.

The raw materials for portland and masonry cements are two or more of high-calcium limestone, cement rock, marl, coquina, clay, shale, iron oxide, and gypsum. Those for pozzolan include diatomaceous earth, opaline cherts and shales, clays, tuffs, pumicites, and fly ash. Clay, shale, and high-calcium limestone are currently used in Alberta for the production of portland and masonry cement at Edmonton and Exshaw in plants with a total capacity of about 1.4 million tons per year.

A Devonian limestone layer, 500 feet thick, striking east, dipping 35° south, containing more than 96 per cent  $\text{CaCO}_3$  and 1 to 2 per cent  $\text{MgCO}_3$ , is quarried at Cadomin, where a mountain of it is available, and burned in a plant at Edmonton along with nearby clay 50 feet or more thick from glacial Lake Edmonton. An analysis of this clay showed 62.2 per cent  $\text{SiO}_2$ , 19.6 per cent  $\text{Al}_2\text{O}_3$ , and 5.5 per cent  $\text{Fe}_2\text{O}_3$ .

Limestone beds, striking north 47° west, dipping 45° southwest, about 100 feet thick in the upper part of the Devonian Palliser Formation, and with about 94 per cent  $\text{CaCO}_3$  and about 4 per cent  $\text{MgCO}_3$ , are quarried at Exshaw and burned there along with Upper Cretaceous Wapiabi shale from Seebe, 5 miles east of Exshaw. This Seebe shale is thin bedded, fossiliferous, contains ironstone and chert nodules, dips 23° west, and has the following compositions: 64 per cent  $\text{SiO}_2$ , 16 per cent  $\text{Al}_2\text{O}_3$ , 5.4 per cent  $\text{Fe}_2\text{O}_3$ . Some of the resulting clinker is ground at Exshaw and some in Edmonton. The small amounts of iron oxide, required in these cement plants are obtained as by-products from industries within Alberta or adjacent provinces. The gypsum used comes from British Columbia or Manitoba. In Alberta, 772,170 short tons of portland and masonry cements for construction and soil-cement road base were produced in 1962.

Although none has yet been discovered in Alberta, cement rock, which is an impure limestone with a composition approaching the ideal ratios of lime, alumina, and silica, probably exists in Paleozoic strata in the mountains.

Marls are earthy friable accumulations of calcareous materials secreted by plants and animals, and mixed with some clay. A deposit of marl near Marlboro was used from 1912 to 1917 for the manufacture of cement there. The reserves remaining in this deposit are small. Other marl deposits are in the Hand Hills, where a large deposit underlies the conglomerate capping the hills, and northwest of Edmonton at Big Lake. Other small deposits are widespread in Alberta.

Coquina is a rock consisting mostly of broken shells; in some places it is used in the manufacture of cement. A deposit of coquina, consisting of fossil oysters, 58 feet above the base of the Upper Cretaceous St. Mary River Formation is exposed 12 miles northwest of Cardston near Hillspring along the Belly River. The bed ranges in thickness up to 15 feet, contains shale lenses up to 6 inches thick, and can be traced for as much as 800 feet in one place. There the strata trend northwest and dip 38° west.



Farther west the beds have been faulted and dip more steeply. Analysis of the coquina show 77 to 93 per cent  $\text{CaCO}_3$  and about 1 per cent  $\text{MgCO}_3$ . Overburden ranges from light to heavy. Bearpaw shale suitable for mixing with the coquina for the manufacture of cement and containing about 60 per cent  $\text{SiO}_2$ , about 20 per cent  $\text{Al}_2\text{O}_3$ , about 5 per cent  $\text{Fe}_2\text{O}_3$ , and about 3.5 per cent alkalis, can be stripped nearby. In 1947 reserves of coquina were considered insufficient for a cement plant. Prior to that small amounts had been used for poultry grit, and recently the development of the deposit to again supply poultry grit has been proposed.

Although no natural pozzolans have been produced in Alberta, pumicite and montmorillonite-bearing clays and shales are available in Cretaceous and Tertiary strata. No deposits of either of these materials in Alberta have been tested for pozzolanic activity, but some samples of pumicite contain a high proportion of volcanic glass, the active ingredient in this type of pozzolan. Data on some deposits of pumicite in Alberta are given in Table 16. The pozzolanic properties of bentonites or montmorillonites can be improved by calcination. Calcined calcium montmorillonites are more effective in controlling the alkali-aggregate reaction in concrete than sodium montmorillonites. Although many Alberta montmorillonites are higher in calcium than sodium, their effectiveness on this reaction is not known. Details of some deposits are given in the section on bentonite.

Fly ash is fine-grained ash consisting mostly of silica, alumina, and iron oxide. It can be recovered from power-generating plants which burn coal, the amount

recovered depending on the ash content of the coal, the slagging temperature of the ash, the amount of coal burned, and the efficiency of the collecting equipment. The largest use for fly ash is as a pozzolan either blended with portland cement or mixed with lime for such purposes as stabilizing soils and making bricks. It is also used as a filler in asphalts, plastics, and paints. In Alberta, fly ash is produced at Drumheller, Forestburg, and Wabamun in power-generating plants, which burn coals with similar ash contents and slagging temperatures. Present production is estimated at about 100,000 tons per year, but only about one sixth of this is recovered, for use in cement for oil wells and concrete for dams. With conversion of some generators from gas to coal and installation of new generators in both an existing power plant and the proposed power plant at Genesee, production of fly ash in Alberta is expected to exceed 300,000 tons per

Table 16. PUMICITE DEPOSITS IN ALBERTA

Locality	Thickness (feet)	Remarks
Irvine	5-10	Varies from pure pumicite to bentonitic; 100 feet above base of Bearpaw Formation on north and east sides of Cypress Hills extensive outcrops one mile south of Irvine.
Marten Mountain	1	Poorly exposed; at west end of mountain at east end of Lesser Slave Lake.
Calgary	1	In alluvial deposits a short distance above bedrock, just downstream from Glenmore Dam.
Willow Creek SE 36-13-2-5	1	Formerly mined; cream-colored to black; under 2 feet of overburden; 80 per cent passes a 200-mesh screen; recently reported thicknesses are considerably greater than 1 foot.
Asplund NE 27-69-22-5	1 1/2	Indurated, partly altered to bentonite.
20 miles north of Rocky Mountain House SE 26-42-8-5	unknown	Exposed on both sides of North Saskatchewan River.

year between 1970 and 1980.

In 1962 a plant started grinding burned coal slack at Coalhurst, near Lethbridge to make pozzolan for oil-well cementing. The raw material is obtained from an old coal mine nearby. Pozzolan might be similarly produced elsewhere in Alberta where sufficient coal slack is available.

CERAMIC CLAYS

Brick and Tile Clays:

Clays and shale suitable for the manufacture of brick and tile are common in Alberta. They are produced from Cretaceous and Tertiary shales and from Pleistocene clays.

The requirements of brick and tile clays are moderate plasticity to facilitate moulding, sufficient green and dry strengths to facilitate handling, low shrinkage during both drying and firing to eliminate cracking, a low vitrification range to avoid extra fuel costs, and a suitable color after burning. Most brick and tile clays are red-burning because of their content of iron oxide. The presence of moderate to large amounts of montmorillonite in many Cretaceous, Tertiary, and Pleistocene shales and clays in Alberta causes excessive shrinking and cracking and slow drying. The brick-making features of clays and shales in several formations in Alberta are given in the Table below.

Table 17. CLAYS AND SHALES FOR BRICK AND TILE IN ALBERTA

System	Formation or Group	Remarks
Lower Cretaceous	Blairmore	Free from drying defects; strippable deposits are few and small; will make good quality brick and tile.
Upper Cretaceous	Alberta	Very low plasticity otherwise suitable for bricks.
Upper Cretaceous	Foremost and Oldman	Variable lithology, highly plastic and difficult to dry; drying difficulty can be overcome by preheating, chemical treatment, or using more sandy clays.
Upper Cretaceous	Bearpaw	Undesirable white scum forms during firing on bricks.
Upper Cretaceous	Edmonton	Similar to Foremost and Oldman Formations, but have higher plasticity and shrinkage; might be improved by preheating or chemical treatment.
Upper Cretaceous	Whitemud	Suitable, but exposed only in Cypress Hills far from manufacturing centres.
Tertiary	Paskapoo	Shaly parts are suitable, but sandstone is more common in outcrops; calcareous shales make buff-colored porous bricks.
	Pleistocene	High plasticity and high shrinkage might be overcome by proper treatment; siltier clays are suitable.



### Refractory, Whiteware, and Stoneware Clays:

Clays suitable for the manufacture of refractory bricks and china are composed predominantly of kaolinite. No workable deposits of such clay have yet been discovered in Alberta. However, the Whitemud Formation of the Cypress Hills in Saskatchewan and Alberta contains kaolinitic sands which may be a suitable source of kaolin.

Fireclays are one type of alumina-silica refractory whose high-temperature-softening behaviour is expressed in terms of the pyrometric cone equivalent (P.C.E.). Fireclays should have P.C.E. 's from 23 to 33 corresponding to softening temperatures from 1605°C to 1743°C.

Stoneware clays are used in the manufacture of pottery, crockery, and sewer pipes. They should have good plasticity, high strength, low shrinkage, a semi-refractory nature, and be of dense-burning character. They need not burn white. There are considerable deposits of stoneware and lower-grade refractory clays in the Cypress Hills in southeastern Alberta and along the Athabasca River in northeastern Alberta.

The Whitemud Formation is exposed in southern Alberta only on the flanks of the Cypress Hills. There it consists of up to 25 feet of light grey clays, brown clays, and argillaceous silts, in thin beds showing rapid horizontal changes in lithology and ceramic properties. All but the most silty clays have high shrinkage. The fireclays and semi-fireclays have P.C.E. 's from 20 to 30. These clays are in beds about 3 feet thick, and covered by 10 to 30 feet of overburden, some of which is clay of stoneware grade. Similar clays in the Whitemud Formation in Saskatchewan are presently being exploited. Stoneware clays are produced from the Whitemud Formation in Saskatchewan, and part of this production is used in the manufacture of



*One of the two new ferrous metal foundries which commenced production in southern Alberta to supply the rapidly growing markets for iron and steel castings.*



sewer pipes at Medicine Hat. Many of the clays in the Whitemud Formation could be improved by simple treatment or blending. Although they increase in thickness and quality eastward, the deposits in the western part of the Cypress Hills are more accessible and covered by thinner overburden.

Some clays lying on the pre-Cretaceous erosion surface of Devonian limestone beneath and also within the oil sands of the McMurray Formation north of Fort McMurray are of possible value as semi-fireclays or stoneware clays. They are extremely variable ranging from clays which have no ceramic value to semi-fireclays.

#### DIMENSION STONE

Dimension stone is a term applied to stone sold in blocks or slabs of specified shapes or sizes and includes cut stone, rough building stone, ashlar, monumental stone, flagstone, curbstone, and ornamental stone. The value of dimension stone varies from less than \$ 5 per ton to more than \$ 200 per ton depending on the type of rock and the amount of cutting, polishing, and buffing it receives.

The only dimension stone presently quarried in Alberta is known as Rundle stone. It is a hard, flaggy, medium grey, dolomitic siltstone in the Triassic Spray River Formation from Canmore, and is used as rough building stone. Similar rock along the Spray River has been used at Banff as rock-face ashlar.

Field stone--erratic boulders of granite, gneiss, basic igneous rocks, and quartzite from glacial deposits--is used for interior and exterior facings and decorations on houses and buildings. Pinkish Lower Cambrian St. Piran quartzite from rock slides has been used for building stone at Jasper. Quartzite cobbles have also been used. Similar cobbles are abundant in some river beds in the western part of Alberta. Although some limestones in Cambrian, Devonian, and Carboniferous strata in the mountains have high enough crushing strengths, severe fracturing, high and variable dips, and excessive hardness preclude their use in general. Flat-lying Devonian limestones near Fort McMurray in northwestern Alberta are more promising building stones. Small amounts of tufa from Big Hill and Radnor have been used as decorative stone. Although most Cretaceous and Tertiary sandstones have unattractive colors, poor weathering properties, and are soft, some from the Cretaceous Oldman Formation and the Tertiary Paskapoo Formation were quarried for building stone before 1914. Rocks in sills in the Precambrian Kinsella Formation in North Kootenay Pass and certain porphyries and breccias of the Cretaceous Crowsnest volcanic rocks near Coleman would make attractive ornamental stone.

#### DOLOMITE

Dolomite is used chiefly as a flux in the smelting of iron and other metals to control the fluidity of the slag; as a refractory material for patching open hearth furnaces; and as a source of agricultural magnesium. Other uses are in the extraction of magnesia from sea water, in production of basic magnesium carbonate for use as a heat insulator, and as road metal. Other possible uses are as a filler when ground and in stucco dash when sized and of a suitable color. Although no dolomite is being quarried in Alberta, large quantities are available in the Rocky Mountains, but few deposits have been tested for usefulness. Data on some deposits are given in Table 18; other deposits could easily be found if a demand for dolomite should arise.



Table 18. DOLOMITE DEPOSITS OF ALBERTA

Location	Thickness (feet)	CaCO <sub>3</sub> (per cent)	MgCO <sub>3</sub> (per cent)	Remarks
Kananaskis	200	56.0	42.8	On easternmost mountain just north of railway; mostly pure dolomite interbedded with limestone and magnesian limestone at top and bottom; strikes N 60° W, dips 35° SW.
	500	55.4	43.6	
	70	55.7	44.0	
Gap Lake	40	55.4	44.3	North of highway opposite centre of lake; suitable for quarrying.
Nordegg	250	57.3	41.3	In cut at mile 146 of C.N.R.; brown, medium-grained, compact.

ELEMENTS IN FORMATION WATERS

The formation waters of some oilfields in Alberta carry high concentrations of some elements. Although none are produced in Alberta, magnesium, bromine, and iodine are considered here.

Magnesium is used in alloys requiring high strength, light weight, resistance to corrosion, or ability to withstand high temperatures, and as a reducing agent in the production of uranium, titanium, beryllium, and zirconium. It is produced from sea water, dolomite, and magnesite. The only Canadian producer, most of whose production is exported, uses dolomite as raw material for a plant in Ontario. The concentrations of magnesium in some formation waters produced in Alberta are several times the 1400 milligrams per litre of sea water. Thus although reserves of raw materials elsewhere are almost unlimited, magnesium might be profitably extracted from formation waters or brines which contain high concentrations and which have substantial production. These are given in Table 19.

Magnesium is produced in Michigan, California, New Jersey and Texas. Production in 1961 totalled 356,384 short tons, valued at \$ 25.5 million, Canadian imports of Magnesium salts totalled 4.2 million pounds, valued at \$513,000.

Bromine is used chiefly as ethylene dibromide in gasoline antiknock compounds. It is also used as a bleaching and disinfecting agent, as a fumigating agent, in photography, and in metallurgy for the production of high-purity metals. Bromine is extracted from sea water, which contains 67 milligrams per litre; from well brines that contain 1300 to 2900 milligrams per litre; from salt lakes or seas, which contain

up to 7000 milligrams per litre; and from potash deposits, some of which contain up to 0.2 per cent bromine. The concentrations of bromine in some formation waters produced in Alberta as shown in Table 19 is more than 10 times that in sea water, and approaches those in well brines from which bromine is extracted in the United States. Although these figures suggest that bromine for use in gasoline which is produced in Alberta might be obtained from local formation waters, the bromine reserves elsewhere and the size of the local market may mean that production of bromine in Alberta is uneconomic at present. Bromine is produced in Michigan, Texas, Arkansas and California. Production in 1961 totalled 181 million pounds, valued at \$ 44.5 million.

Table 19. FORMATION WATERS WITH PRODUCTION OF MORE THAN 15,000 BARRELS IN 1962  
AND WITH MORE THAN 4200 MILLIGRAMS OF MAGNESIUM OR 800 MILLIGRAMS OF  
BROMINE PER LITRE

		Magnesium		Bromine		Water Production (barrels in 1962)
Formation		(milligrams per litre)	(pounds per barrel)	(milligrams per litre)	(pounds per barrel)	
Waterton	Turner Valley	6,287	2.2	--	--	15,548
Duhamel South	Leduc	2,316	0.8	899	0.31	37,798
Duhamel North	Leduc	5,863	2.1	437	0.15	38,550
Yekau Lake	Leduc	3,384	1.2	870	0.30	56,165
Acheson	Leduc	20,516	7.2	1,496	0.52	60,983
Clive	Leduc	3,504	1.2	936	0.33	69,155
Stettler	Nisku	2,652	0.9	931	0.33	74,153
Glen Park	Leduc	5,000	1.7	940	0.33	94,874
Bonnie Glen	Leduc	4,500	1.6	1,110	0.39	179,033
Golden Spike	Leduc	8,335	2.9	970	0.34	189,035
Malmo	Leduc	6,285	2.2	990	0.35	196,610
Erskine	Leduc	3,000	1.0	800	0.28	353,234
Leduc Woodbend	Leduc	3,135	1.1	1,211	0.42	363,542

Iodine and its compounds are used in many ways: antiseptic and disinfecting agent, human consumption in table salt, seeding clouds to induce rainfall and suppress hail, livestock and poultry feed, in photography, in metallurgy, in contrast mediums for X-rays, and as the radioactive isotope for diagnosis and therapy. Most of the world's iodine is produced from nitrate deposits in Chile; lesser amounts are obtained from oil-well brines in the United States, Japan, and Indonesia. These brines contain from 50 to 70 milligrams of iodine per litre. The formation waters or brines listed in Table 19 contain from 13 to 23 milligrams of iodine per litre with an average of 19 milligrams per litre or 0.007 pounds per barrel. Other formation waters in Alberta contain up to 44 milligrams of iodine per litre but the production of formation waters with 40 or more milligrams of iodine per litre was less than 20,000 barrels in 1962. Although the concentrations of iodine in brines from Alberta are lower than in brines from which iodine is obtained elsewhere, should magnesium or bromine be



extracted from these brines, iodine might be recovered also. Figures on production of iodine in the U.S.A. are not available. However, Canadian imports in 1962 totalled 151,000 pounds, valued at \$ 169,000.

GYPSUM

Gypsum is used chiefly in the manufacture of gypsum products such as wallboard for the building trade, and in the manufacture of portland cement, 3 to 6 per cent being added to clinker as a strengthening and set-retarding agent. Other uses include soil conditioning, and as fillers in paint and paper. In 1962 approximately 100,000 tons of crude gypsum worth \$ 1,120,000 were used in Alberta mostly in gypsum products plants in Calgary, and cement plants in Edmonton and Exshaw. This gypsum is transported from Manitoba and British Columbia where the deposits are more than 920 miles and about 240 miles respectively from Calgary. The layers quarried and mined in Manitoba are below overburden from light to 135 feet thick respectively, contain 90 to 95 per cent gypsum, and are 8 to 30 feet thick. British Columbia gypsum is covered by a few inches to more than 10 feet of overburden, averages 92 per cent gypsum, and is 115 feet thick.

Table 20. GYPSUM DEPOSITS IN ALBERTA

Locality	Stratigraphic Unit	Thickness (feet)	Gypsum (per cent)	Lateral Extent	Dip	Remarks
Peace Point	Middle Devonian	4 to 80 exposed	92	14 miles	flat and undulating	3 to 50 feet of overburden; transportation by river barge to Fort McMurray and thence by rail; in National Park; per cent gypsum is an average of 17 channel samples from parts of 10 sections.
Fort McMurray	Middle Devonian Elk Point	up to 180	88	Unknown	flat	Overlying strata are 400 to 520 feet thick in valleys of Athabasca and Clearwater Rivers near Fort McMurray; at railway; per cent gypsum is an average across 35 feet in one well; analysis from other wells show less gypsum.
Head Creek	Upper Devonian Palliser	16	65-70	200 feet	35° SW	Overburden is rubbly weathering dolomitic breccia and limestone; about 50 miles from railway at High River, and about 10 miles from gravelled road to Longview.
Mowitch Creek	Triassic	9 1/2 9 1/2 12 7	89 95 95 82	2 miles	35° - 78° SW	Overlain by limestones, shales, and sandstones; 35 miles from railway at Devona; in National Park.
Fetherstonhaugh Creek	Triassic	50	95	1180 yards	30° SW	Overlain by vuggy limestone; 40 miles from railway at Loos, B.C.; per cent gypsum from channel samples across 19 feet.

Some very large deposits of gypsum in Alberta are not mined at present because they are within National Parks, far from transportation facilities, or of poor quality. Data on these deposits are given in Table 20. The gypsum layers at Fort McMurray extend north to where they probably reach the surface about 75 miles away. There, if present, they are obscured by glacial drift. Other Middle Devonian gypsum deposits up to 50 feet thick along the Little Buffalo, Salt, and Slave Rivers in northeastern Alberta and extending into adjacent parts of the Northwest Territories are even farther from markets and transportation facilities. It is unlikely that gypsum from deposits in northern Alberta can compete with that from British Columbia at Calgary.

However, should the recent negotiations concerning the return of Wood Buffalo National Park to Alberta be continued and result in mining being permitted there, gypsum from Peace Point might well be transported about 600 miles by water and existing rail to supply the Edmonton market.

HELIUM

The chief uses of helium are in welding as an inert gaseous shield; for detecting leaks in high-pressure and high-vacuum systems; in producing titanium; for low temperature research; for controlling atmospheres; in medicine; and for lifting lighter-than-air craft. The western world's supply of helium comes entirely from the United States where it is extracted from natural gases that contain 0.46 to more than 2.0 per cent helium. A plant is currently under construction in Saskatchewan to recover helium from natural gases containing about 2 per cent. Helium-bearing natural gases in Alberta are found in both gas and oil fields. The estimated helium content in recoverable gases are generally much higher for gas fields than for oil fields. Data on these gases containing more than 0.2 per cent helium is given in Table 21. Most of these gases contain less helium than those from which it is produced in the United States. However, since known helium reserves there are limited and production is not satisfying the demand which is increasing at about 20 per cent per year, helium-bearing natural gases in Alberta may be a valuable reserve. At present the helium is lost to the atmosphere when these gases are burned as fuel.

Table 21. ALBERTA NATURAL GAS WITH MORE THAN 0.2 PER CENT HELIUM

Gas Field	Location (Tp., R., Mer.)	Formation	Helium (per cent)	Recoverable Gas at Dec. 31, 1962 (BCF)	Helium in Recoverable Gas (MMCF)	Gas Production in 1962 (MMCF)	Helium in Gas Produced in 1962 (MMCF)
Duhamel	45-21-4	Viking	0.21	3	6	0	0
Normandville	79-22-5	Jurassic	0.21	3	6	0	0
Manyberries	5-5-4	Bow Island	0.21	17	36	978.4	2.05
Willesden Green	43-6-5	Cardium	0.43	9	39	3716.6	15.95
Medicine Hat	14-6-4	Bow Island	0.36	15	54	0	0
Smith Coulee	3-10-4	Bow Island	0.26	23	60	2518.3	6.54
Normandville	79-22-5	Mississippian	0.42	24	101	255.9	1.07
Pendant D'Oreille	4-10-4	Bow Island	0.27	72	270	4527.6	11.22
Sturgeon Lake South	69-22-5	Leduc	0.39	76	295	2172.9	8.47

OIL FIELD

Chauvin	43-1-4	Wainwright	0.25	--	--	21.2	0.053
Chauvin South	42-2-4	Colony	0.24	--	--	0.4	0.001
Little Smoky	67-22-5	Leduc	0.65	0.3	1.8	65.5	0.426
Red Earth	87-8-5	Granite Wash	0.21	1.3	2.7	8.0	0.017
Normandville	79-22-5	Leduc	0.34	1.2	4.1	45.4	0.154
Sturgeon Lake	71-23-5	Leduc	0.37	19.2	71.0	482.4	1.784

OTHER HELIUM CONCENTRATIONS NOT IN DESIGNATED GAS OR OIL FIELDS

84-13-6	Mississippian	0.20
87-9-6	Leduc Reef	0.28
77-25-5	Eaglesham-Rundle	0.32
75-19-5	Granite Wash	0.51
87-7-6	Leduc	0.54
87-8-6	Woodbend Reef	0.60
1-11-4	Leduc	0.98
	Beaverhill Lake	1.66



## IRON DEPOSITS

Various showings of iron-rich rocks have been reported from different parts of Alberta in the past sixty years, but only two of these deposits have proven to be of sufficient size to warrant detailed investigation. Low-grade titaniferous magnetite deposits of sedimentary origin are present at widely scattered localities in the Foothills of southwestern Alberta, near the Crowsnest Pass. The deposits are thin lenses of banded magnetite-rich sandstones in the basal strata of the Late Cretaceous Belly River Formation, and have been complexly folded and faulted. The richest deposits grade between 25 and 30 per cent iron, with 4 to 5 per cent  $\text{TiO}_2$ , but are unsuitable for conventional beneficiation and smelting techniques because of their high chlorite and titanium contents and fine grain sizes. Reserves are estimated at less than two million tons near Burmis in the Crowsnest Pass, and less than six million tons near Dungarvan Creek south of Pincher Creek.

Large deposits of low-grade sedimentary iron ore are present in the Peace River District of northwestern Alberta. The deposits consist of thin but widespread oolitic sandstone bodies interbedded among flat-lying shales and sandstones of Late Cretaceous age. The iron-rich sandstones are composed mainly of limonitic oolites in a fine-grained groundmass of siderite, chamosite, and clay, and grade between 35 and 40 per cent iron, with relatively high silica and low lime contents. The largest deposits crop out north of the Peace River along the flanks of the Clear Hills, on Swift Creek and near Worsley, where reserves of potential iron ore are estimated from drilling data to range between 250 million and one billion tons. Ferruginous sandstone deposits equivalent in age to those in the Clear Hills also are present south of the Peace River, between Spirit River and Gordondale, but no estimates of grade or reserves are available. Conditions favourable to the development of the Clear Hills deposits are their accessibility, low overburden, and simple structure. Although the low grade and complex mineralogy of the iron-rich sandstones indicate that the bulk of the deposits is not



*Patented garbage-can protectors are made in Edmonton for use all over Canada.*



suitable for conventional beneficiation and smelting procedures, under current market conditions, research has shown that a hydro-metallurgical process is feasible in the laboratory. Whether such a process will be feasible for a commercial operation is still uncertain.

#### LIGHTWEIGHT AGGREGATE

Lightweight aggregates are natural or manufactured products used to make concrete with densities down to one third or less those of concrete made with sand, gravel, and crushed rock. Natural materials include pumice and pumicite, tuffs, breccia, and diatomite. Manufactured materials include expanded clay, shale, perlite, and vermiculite but only clay and shale expanded in rotary kilns are satisfactory for structural concrete. Clay and shale are heated to make carbon dioxide and sulfur dioxide released from calcite and pyrite already present, bloat the clay or shale to a pyroplastic mass full of gas bubbles, similar to pumice and pumicite. Although several deposits of pumicite, as mentioned in the section on cement, are known in Alberta, none is being used for lightweight aggregate at present, apparently because most are too far from large markets or are unsuitable for structural concrete. Lightweight is being made from imported vermiculite and perlite in Calgary, there being no deposits of either within Alberta. Clays and shales are expanded into lightweight aggregate in rotary kilns in Edmonton and Calgary. In 1962 lightweight aggregate worth \$ 663, 000 was used in Alberta.

Clays and shales suitable for the manufacture of lightweight aggregate are widespread in Alberta, the best products being obtained from Upper Cretaceous shales of the Belly River and Bearpaw Formations. Most outcrops of these formations are, however, too far from large markets for quarrying at present. Furthermore, numerous sandstone beds in the Belly River Formation make quarry sites in it difficult to find.

Clays and shales for lightweight aggregate contain 60 to 80 per cent silica, 15 to 30 per cent alumina, 6 per cent or more ferric oxide, and about 6 per cent alkalis and alkaline earths. This combination will develop a viscous glass, and expand or bloat when heated to incipient fusion between 1600° and 2400°F to produce a chemically inert material low in weight, high in strength, low in absorption, and fire resistant. Large amounts of calcite produce too much lime, whose fluxing action is excessive. Coarser grades of aggregate are lighter than fine grades. The plant that expands shale in Calgary uses Cretaceous and Tertiary shales quarried 25 miles away; those in Edmonton expand conveniently located Pleistocene clays, most local clays having been found suitable.

#### LIME

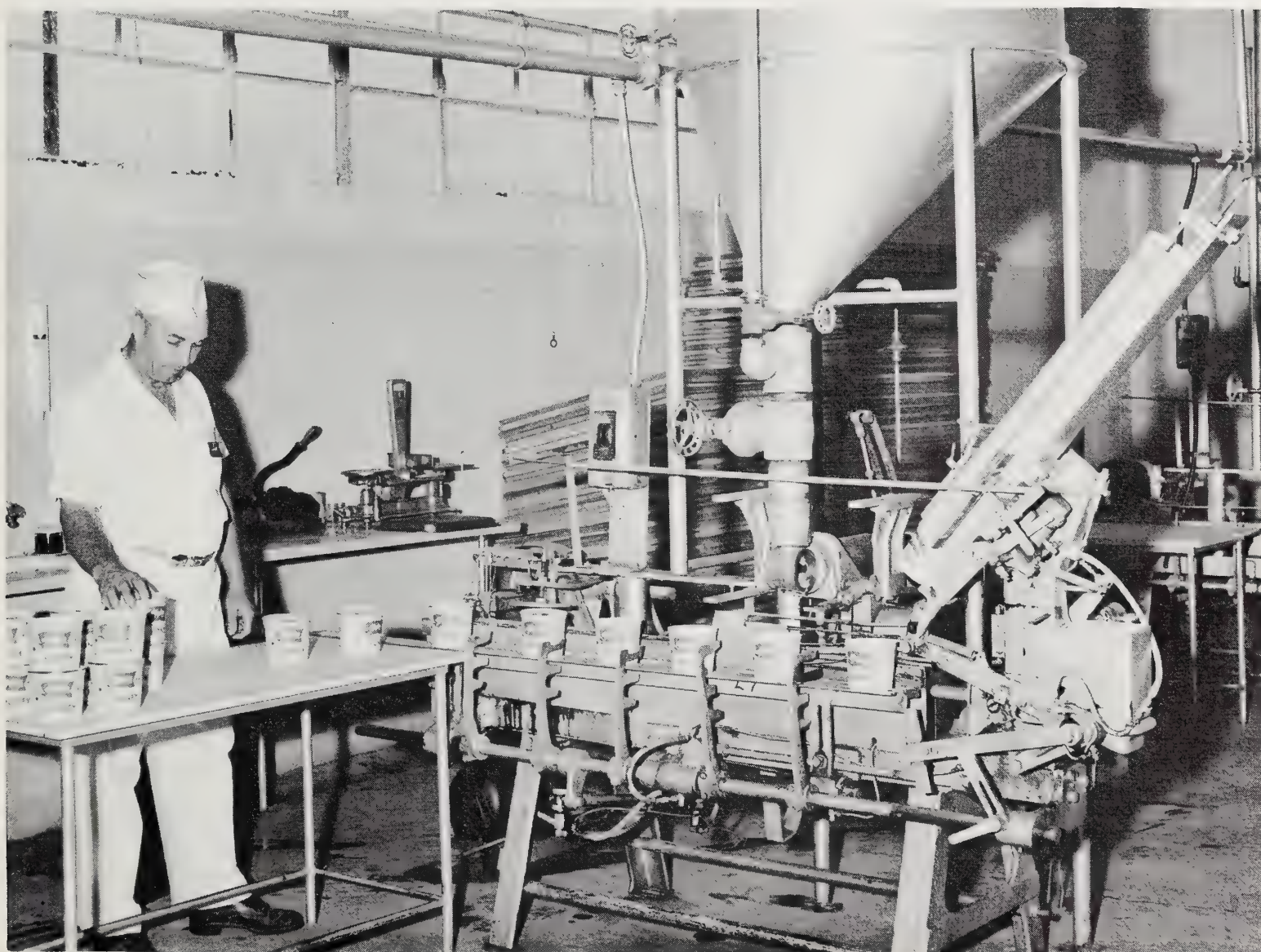
Lime is the most commonly demanded alkali because it is readily available and relatively cheap. The term includes the products from calcining both limestone and dolomite. Industrial uses include the production of chemical compounds, glass, and dissolving fluids for pulp. Metallurgical uses include control of acidity and alkalinity, neutralization of waste sludges and liquors, fluxes in non-ferrous smelting. Building uses are as an ingredient in plaster, mortar, and brick. It is also used as a fertilizer, in tanning, sugar refining, treating water, making insecticides and fungicides, and stabilizing road bases and subbases. Many of these uses require lime from limestone, but many building limes are dolomitic. In 1962 in Alberta, 48, 000 tons of quicklime and hydrated lime worth about \$ 757, 000 were produced.



Cambrian limestone beds striking north  $55^{\circ}$  west and dipping  $75^{\circ}$  southwest were formerly quarried at Kananaskis for a lime plant there. At least three bands of dense pale-grey, high-calcium limestone from 40 to 80 feet thick are separated from each other by 75 to 150 feet of magnesian limestone. Quarries now supplying limestone for the lime plant at Kananaskis are on the southwestern slope of Grotto Mountain north and northwest of Gap. These quarries supplied limestone for a cement plant in Calgary from 1906 to 1914, and for a lime plant at Gap before 1913. The best limestone is about 70 feet thick, strikes north  $68^{\circ}$  west, dips  $45^{\circ}$  south, and contains 95 to more than 99 per cent  $\text{CaCO}_3$  and up to 2 per cent  $\text{MgCO}_3$ .

Carboniferous limestones striking north  $45^{\circ}$  west, dipping  $45^{\circ}$  southwest in layers 80 to 140 feet thick are quarried for a lime plant west of Crowsnest Lake. The limestone contains about 97 per cent  $\text{CaCO}_3$  and about 2 per cent  $\text{MgCO}_3$ . In addition to lime, this plant supplies crushed and ground limestone for glass-making, poultry grit, stucco dash, coal-washing, and stock feed.

High calcium limestones from the Crowsnest Pass or the Bow Valley are calcined at Raymond, Picture Butte, and Taber to supply lime for beet-sugar plants.



*Alberta honey is processed and marketed from this spotless Southern Alberta plant.*



LIMESTONE

Limestone has many uses in many types of industry: road metal; cement and lime production; concrete aggregate; rubble and riprap; railroad ballast; fillers in asphalt, paint, and rubber; terrazzo chips, stucco dash; fluxes in the smelting of ores; and as fertilizers. Because of its low value the greatest factor determining the demand for a particular limestone is the distance to markets; limestone from other provinces does not compete with Alberta limestone. Other factors include composition, texture, hardness, color, and thickness and extent of beds. In 1962, production in Alberta was about 81,000 tons, valued at about \$ 294,000.

Table 22. HIGH-CALCIUM LIMESTONES IN ALBERTA

Locality	Thickness (feet)	CaCO <sub>3</sub> (per cent)	MgCO <sub>3</sub> (per cent)	Remarks
Blairmore, at base of Turtle Mountain	24	98.8	1.2	Strikes N 26° W, dips 65° SW, quarried for lime plant before 1909 and for a cement plant from 1909 to 1915; 24-foot layer separated from overlying 40-foot layers by 18 feet of cherty magnesian limestone.
	40	96.5	2.8	
	40	88.9	10.2	
Crowsnest Pass	150	96.3	2.0	East of cave opposite Crowsnest Lake; strikes N 55° W, dips 32° SW. Opposite east end of Island Lake; 100-foot layer separated from 150-foot layer by limestone con- glomerate or breccia.
	150	97.0	2.3	
	100	98.2	1.6	
Heart Mountain (south of Kananaskis)	250- 300	94.9	2.7	In lower Rundle Formation; strikes N 30° W, dips 35° to 40° SW; minimum reserves estimated at 10 million tons; analysis are weighted averages.
Exshaw	22	97.3		In section east of Canada Cement plant; strikes N 50° W, dips 30° SW; these layers are near top of measured section and are separated by 27 feet of section covered by overburden.
	92	96.2		
Nordegg	50	95- 98	0.6- 4.2	Layer about 100 feet above base of Rundle Formation a- long railway within one mile of Nordegg; dips 10° to 14° SW; reserves estimated at 8 million tons; two other nearby layers are thinner but have similar compositions; one was formerly quarried for railroad ballast.
Brule	200	91.6	6.3	3 miles SW of Brule at Ogre Canyon.
Fort McMurray	unknown	95.2	1.1	Grab sample from north bank Clearwater River at its confluence with Athabasca River;
	unknown	93.4	1.5	Grab sample from north bank Clearwater River, 23rd baseline, R. 5, 6, W4; both samples from Beaverhill Lake Formation.
Bruderheim	105	99	1	In Devonian Leduc Formation; average of 30 samples taken between 3144 feet and 3249 feet in a well.

Limestone is present in Paleozoic strata at the surface in the mountains and in the northeastern part of Alberta, and under up to several thousand feet of overlying beds in most of the rest of the province. Some limestones are referred to in the sections on cement and lime. Data on some other high-calcium limestone beds mostly along railways are listed in Table 22, above. All these beds are in Devonian or Mississippian strata. Limestone was formerly quarried at a few places within what are now National Parks. These data indicate that high-calcium limestone is abundant; more readily found if it is required.



## OCHRE

The term ochre denotes iron hydroxide with an admixture of clay, sand, and organic matter, that is used mostly for making paint pigments and jeweller's rouge. High-quality ochre is present in small deposits at many springs in Alberta, the largest described deposit covering about one acre to a depth of eight inches near Pakan. None is produced in Alberta.

## PHOSPHATE

Phosphate is used chiefly in the manufacture of fertilizer. Other uses include stock and poultry feed, food processing, metal treatment, pharmaceuticals, sugar refining, ceramics, smoke screens, and in the manufacture of soap and detergents, chemical reagents, and incendiary bombs. Sulfuric acid is used to produce phosphate fertilizers from phosphate rock. An electric furnace is used to produce elemental phosphorus for other purposes.

The phosphate content of phosphate rock is expressed as the per cent of tricalcium phosphate designated in the trade as bone phosphate of lime (B.P.L.). For fertilizer, phosphate rock should contain about 74 per cent B.P.L. To charge an electric furnace a lower B.P.L. content is acceptable, but  $\text{Fe}_2\text{O}_3$  and  $\text{Al}_2\text{O}_3$  must total less than 3 per cent. In 1961 150,176 tons of phosphate rock was imported into Alberta mostly for use in the manufacture of fertilizer. None was mined in the province.

The characteristics and locations of particular phosphate deposits determine their economic value. Deposits of phosphate rock are widespread in the mountains of Alberta from south of the Crowsnest Pass to north of Jasper in the following formations: Perdrix (Devonian), Exshaw (Devonian), Rocky Mountain (Pennsylvanian-Permian), Spray River (Triassic), and Fernie (Jurassic). The phosphate, some as nodules or oolites, is present in beds of shale, limestone, chert, and conglomerate, ranging from 0.1 feet to 2 feet thick and having B.P.L. contents from 9.5 per cent to 58 per cent. Although some of these beds appear to thicken and become richer in B.P.L. toward the west, none of those known are thick enough, continuous enough, or rich enough to compete with the phosphate beds in the Phosphoria Formation to the south in the United States. There the richest beds range from 3 to more than 9 feet thick and contain 44 to 79 per cent B.P.L.

## ROCK WOOL

Rock wool is used mostly for thermal insulation against heat or cold. A plant producing it has operated intermittently at Exshaw since shortly after the war. Shale layers about 300 feet thick, striking north  $20^\circ$  west, and dipping  $42^\circ$  to  $45^\circ$  west at the base of the Mississippian Banff Formation were used as wool-rock. Analyses of the shale showed 38 to 48 per cent silica, 5.2 to 6.9 per cent alumina, 2.2 to 2.8 per cent ferric oxide, 16 to 26 per cent lime, 3.4 to 4.3 per cent magnesia, 18 to 23 per cent loss on ignition, and less than 2 per cent alkalis.

## SALT

Common salt has a wide range of uses, such as in the chemical industry for the manufacture of sodium hydroxide, chlorine, and hydrochloric acid; in the tanning industry; salting and curing meat and fish; cattle and stock feed, textile-dyeing; in water softeners; refrigeration; ice and dust control on roads, and for domestic purposes. In Alberta about 92,000 short tons of salt worth about \$1,500,000 were produced in 1962. At Lindbergh salt is obtained by means of an artificial brine from salt beds



3,600 feet below the surface for domestic and industrial consumption. After evaporation part of this salt is fused, crushed, and screened to yield a coarse pure product. At Duvernay brine from salt beds 3,600 feet below the surface is used to make caustic soda, chlorine, and hydrochloric acid. From 1938 to 1950 salt was produced at Fort McMurray from a well that penetrated salt beds 600 to 800 feet below the surface.

Deposits of common salt underlie a considerable area of eastern Alberta bounded approximately by Patricia in the south, Edmonton on the west, Fort Vermilion on the west and north, and Fort McMurray on the northeast. On the east they extend into Saskatchewan. The salt beds dip southwesterly being 600 to 800 feet below the surface at Fort McMurray and 5,000 to 6,000 feet below the surface near Edmonton. The thickest salt deposits are in the Middle Devonian Elk Point Group; thinner deposits are in the Upper Devonian Stettler Formation near Stettler and east of Drumheller. The salt beds are more than 1300 feet in total thickness about 30 miles west of Cold Lake and become thinner in all directions, being more than 700 feet thick at Lindbergh, between 400 to 500 feet at Duvernay, up to 200 feet at Fort McMurray and 165 feet just east of Edmonton. Individual salt beds range up to about 440 feet thick and are separated from each other by layers of limestone, dolomite, anhydrite, and gypsum. Thus salt is readily available for all foreseeable needs in Alberta.

#### SAND AND GRAVEL

Sand and Gravel are used mostly for road surfacing and as aggregate for concrete. Pea gravel separated from other sizes by screening is used for roofs, and crushed chips are used for winter traction at airports. In 1962 production in Alberta exceeded \$ 12 million. Economic deposits of sand and gravel are relatively scarce on the plains of Alberta but are plentiful in the foothills and mountains. Their locations along with the locations of other surface materials in some parts of Alberta are shown on maps of the surficial geology. These maps are available from the Research Council of Alberta and the Geological Survey of Canada.

Geologically, sand and gravel deposits on the plains of Alberta can be divided into three groups according to age: preglacial, glacial, and Recent. Preglacial gravel deposits are composed mainly of rounded quartzite pebbles derived from the Rocky Mountains. They cap bedrock topographic highs such as the Cypress, Hand, Swan, and Clear Hills, and some other small bedrock knobs, and form deposits in preglacial bedrock channels. Generally these sand and gravel deposits are of a good grade but comprise only a small fraction of the total production because of their small number and the depth of overburden. Edmonton is supplied largely by this type of gravel.

The last continental glacier which covered almost all of Canada and large parts of the United States disappeared from Alberta only about 10,000 years ago. The meltwaters of the wasting glacier were loaded with debris of bedrocks over which the glacier had passed. This debris consisted mostly of Cretaceous clays and sands, with only small amounts of materials of gravel composition, which had been carried from the Canadian shield several hundred miles to the north. Economic gravels were, therefore, deposited only in places where very large amounts of glacial meltwater washed out the fine material and concentrated the gravel mostly along the limited number of large glacial drainage ways. The Canadian National Railways pit at Kinsella, the pit at Little Canada, the pit near Drumheller, and those supplying Calgary are in glacial gravels.



Recent sands and gravels are found along present rivers, such as the North Saskatchewan, Red Deer, and Bow. Gravel from these deposits, although poor in quality is used for lack of better deposits.

#### SILICA SAND

In Alberta the most important use of silica sand is in the manufacture of glass, both bottles and fibre glass being produced. In 1962, 43,000 tons of high grade silica sand, valued at \$ 585,000 were used. Since a large part of this was imported from the United States, a suitable deposit within the province would be beneficial. Depending on the quality of glass to be produced, glass sands contain less than 0.025 per cent to 0.08 per cent  $\text{Fe}_2\text{O}_3$  and low concentrations of constituents other than silica. The acceptable range of grain sizes is between 20 and 140 or 200 mesh but not more than 2 per cent should be less than 100 mesh. In addition, a commercial deposit must be fairly large, of uniform composition and close to transportation facilities. Some possible sources of silica sand are known in Alberta but only one is pure enough or well situated with respect to transportation facilities to be used.

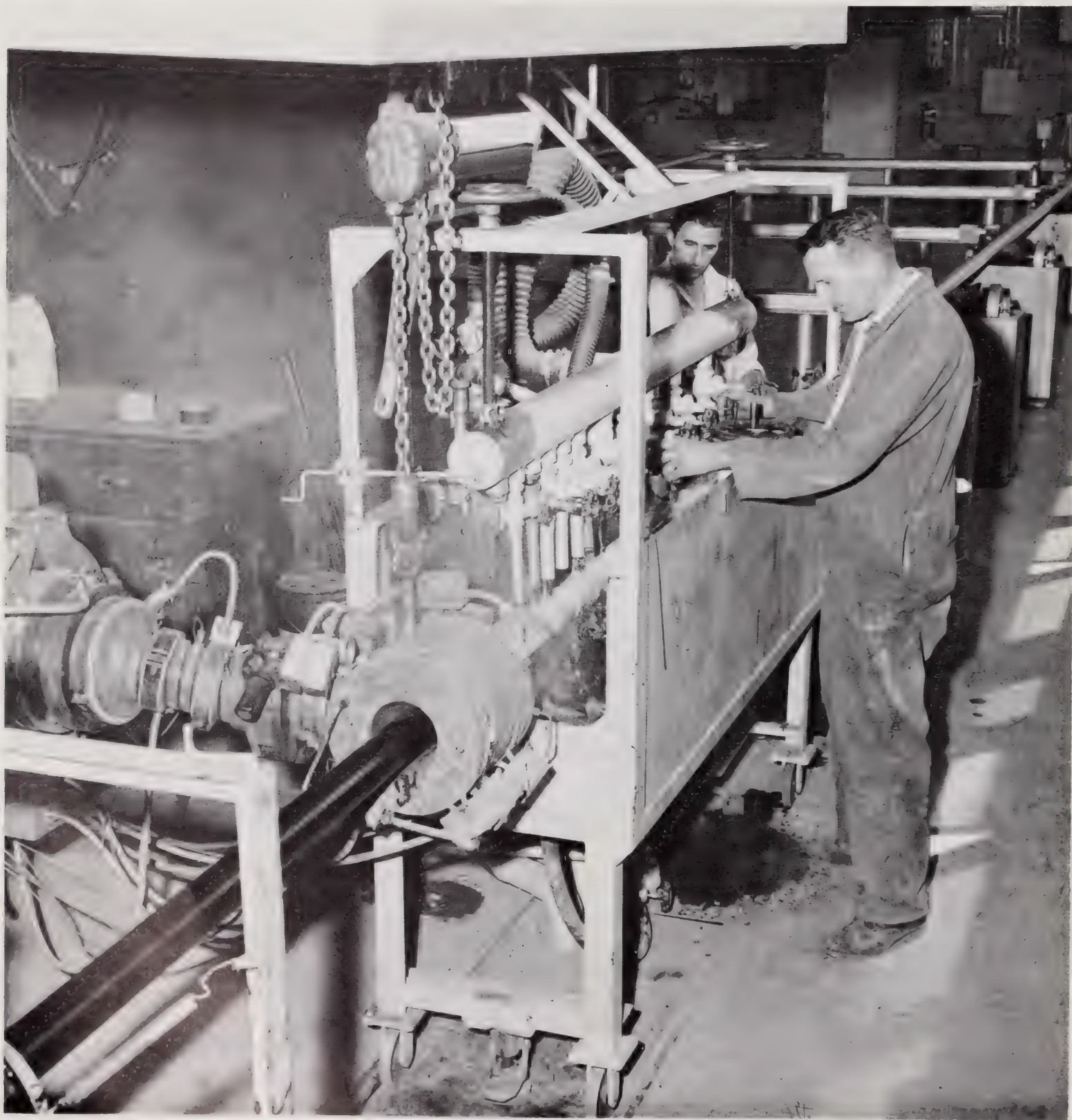
This deposit of lacustrine wind-blown sand is between Bruderheim and Fort Saskatchewan. The sand is beneficiated to a product mostly between 40 and 60 mesh in size and containing 93 per cent  $\text{SiO}_2$ , 2.8 per cent  $\text{Al}_2\text{O}_3$ , 0.35 to 0.4 per cent  $\text{Fe}_2\text{O}_3$ , and 0.8 per cent  $\text{Na}_2\text{O}$  and  $\text{K}_2\text{O}$ , and is currently used to produce fibre glass for insulation.

Other possible sources include a number of lacustrine, fluvial, and dune sands mostly near Edmonton. These are too high in iron for glass sands, although some were improved by beneficiation. A lens of unconsolidated clean, fine-to-coarse grained quartz sand in the upper 40 to 60 feet of the Peace River Formation lies along the Peace River seven miles downstream from the town of Peace River. Beneficiation of this sand by means of screening and running through a Wilfley table showed that 50 to 60 per cent of it had an acceptable range of grain sizes and 0.048 per cent to 0.123 per cent  $\text{Fe}_2\text{O}_3$ . Another deposit of sandstone believed to be a poorly cemented facies of the Mount Wilson Quartzite lies 22 miles north of Lake Louise station in Banff National Park. It contains about 98 per cent  $\text{SiO}_2$  and 0.2 per cent  $\text{Fe}_2\text{O}_3$ , but its exploitation is forbidden by regulations concerning mining in National Parks. Size analyses of the sand remaining after extraction of oil from the oil sands in the McMurray Formation show a highly variable grain size, much being finer than desirable for glass. Mineralogical analyses of this sand show a large number of impurities, some of which can be removed by beneficiation. However, in a deposit of this size, suitable glass sand may yet be found.

Silica sand is also used for moulding in foundries. Some foundries in Alberta use local sand; others import sand. The sands used are in their natural state, or made by mixing suitable sand with clay. The requirements include rounded grains with a limited range of grain sizes between 20 and 200 mesh to give high permeability, sufficient purity to have a high sintering point, and moderate to high green and dry strengths. Some of the sands referred to previously or other local deposits would undoubtedly be suitable. Even synthetic foundry sands could be produced locally by screening to obtain the desired range of grain sizes and adding local bentonite for bonding, should the market be large enough for such production.



Silica sand is also used in Alberta for hydraulic fracturing of oil-bearing formations, all needs being imported. The sand must be clean and dry, in well rounded grains with high compressive strength, high in silica content, and free from acid-consuming constituents. Most used is the grade which has at least 80 per cent between 20 and 40 mesh and 100 per cent between 16 and 60 mesh. Coarser grades are also used. The specifications of well rounded grains and high silica content are the chief drawbacks to the use of local sands.



*Pipe used in the petroleum industry is protected by special coatings applied at a plant near Edmonton.*



SODIUM SULFATE

Sodium sulfate is used chiefly in the kraft pulp industries. It is used to a lesser extent in the manufacture of glass, synthetic detergents, various sodium salts in the chemical industry, pharmaceuticals, fertilizers, in dyeing, tanning, and uranium processing. Most is in the form of salt cake, anhydrous  $\text{Na}_2\text{SO}_4$  with up to 3 per cent impurities. In Alberta sodium sulfate from Saskatchewan is used in the manufacture of pulp at Hinton.

Natural sodium sulfate collects as crystal beds and brines in closed drainage basins in Manitoba, Saskatchewan, Alberta, and British Columbia. It is produced only from lakes in Saskatchewan at present, and production is expanding because by-product sodium sulfate from other industries is becoming less abundant. Details of six deposits in Alberta are given in Table 23. Of these an estimate of reserves is available only for Metiskow; it contains 1.8 million tons  $\text{Na}_2\text{SO}_4$  as crystal beds alternating with mud to an aggregate thickness ranging from 20 to 57 feet. Although each deposit has its own characteristics with respect to permanent crystal bed and concentration of  $\text{Na}_2\text{SO}_4$  in its brine, the reserves at Metiskow are only slightly less than some producing deposits in Saskatchewan.

Table 23. SODIUM SULFATE DEPOSITS IN ALBERTA

Deposit	Location (Sec., Tp., R., Mer.)	Area (acres)	Depth of brine (feet)	$\text{Na}_2\text{SO}_4$ in brine (per cent)
Metiskow	11, 12, 13, 14, 24-39-6-4	640	1	10
Kinsella	30-47-11-4	153	4-6	4
Kinsella	29-47-11-4	96	2-3	11
Kinsella	28, 33-47-11-4	200	4-5	5
Cairns	9, 16, 21-38-5-4	500	1-2	9
Cairns	9, 16-36-7-4	350	1-2	12

SULFUR

Most sulfur is consumed as sulfuric acid in the fertilizer, chemical, and metallurgical industries; it is one of the basic materials required in manufacturing many products such as steel, textiles, pulp, sugar, leather, plastics, aluminum, explosives and rubber.

Alberta sulfur is produced from hydrogen sulphide which is removed in the process of making the sour natural gas suitable for marketing. The export of large volumes of natural gas, particularly since 1960, has resulted in a marked increase in sulfur production.

In 1963 approximately 1, 150, 000 long tons of sulfur were produced in Alberta. This output represents 70% of Canada's total sulfur production. It is anticipated that Alberta sulfur production will reach 2, 000, 000 long tons by 1970.

Canada's sulfur requirements are approximately 500,000 long tons per year. A sizeable portion of this is consumed in eastern Canada, too far to be economically served by Alberta producers; most of the sulfur produced in Alberta is sold in foreign export markets. Freight charges reduce significantly the net back which accrues to producers from sulfur sales. As a result sulfur is a relatively cheap commodity f.o.b. plants in Alberta.

Table 24. SULFUR PRODUCTION IN ALBERTA - 1962, 1963

Sour Gas Fields with Large Sulfur Reserves	Zone	H <sub>2</sub> S in Raw Gas %	Capacity of plant (long tons per day)	Production (thousands of long tons)	
				1962	1963
Redwater	Leduc	2.8	9	2.2	2
Turner Valley	Turner Valley	1.8	30	7.8	8
Carstairs	Turner Valley	0.5	60	5.7	6
Innisfail	Leduc	14.0	100	33.7	34
Wildcat Hills	Turner Valley	4.0	105	21.7	24
Jumping Pound	Rundle	3.5, 5.5 <sup>1</sup>	135	28.3	28
Nevis <sup>2</sup>	Nisku, Leduc <sup>1</sup>	3.0, 6.7, 3.2 <sup>1</sup>	196	55.8	59
Rimbey	Leduc	3.3, 1.4 <sup>1</sup>	250	63.9	72
Okotoks	Wabamun	34.4	370	120.0	125
Coleman	Rundle	14.2	377	28.3	40
Windfall	Leduc, Wabamun <sup>1</sup>	34.9, 26.1, 15.6 <sup>1</sup>	650	127.2	190
Calgary	Wabamun	1.0, 34.0 <sup>1</sup>	863	170.2	190
Pincher Creek	Rundle	10.8	900	173.2	175
Waterton	Wabamun, Rundle <sup>1</sup>	26.5, 22.2 <sup>1</sup>	1,400	134.3 972.3	190 1,143

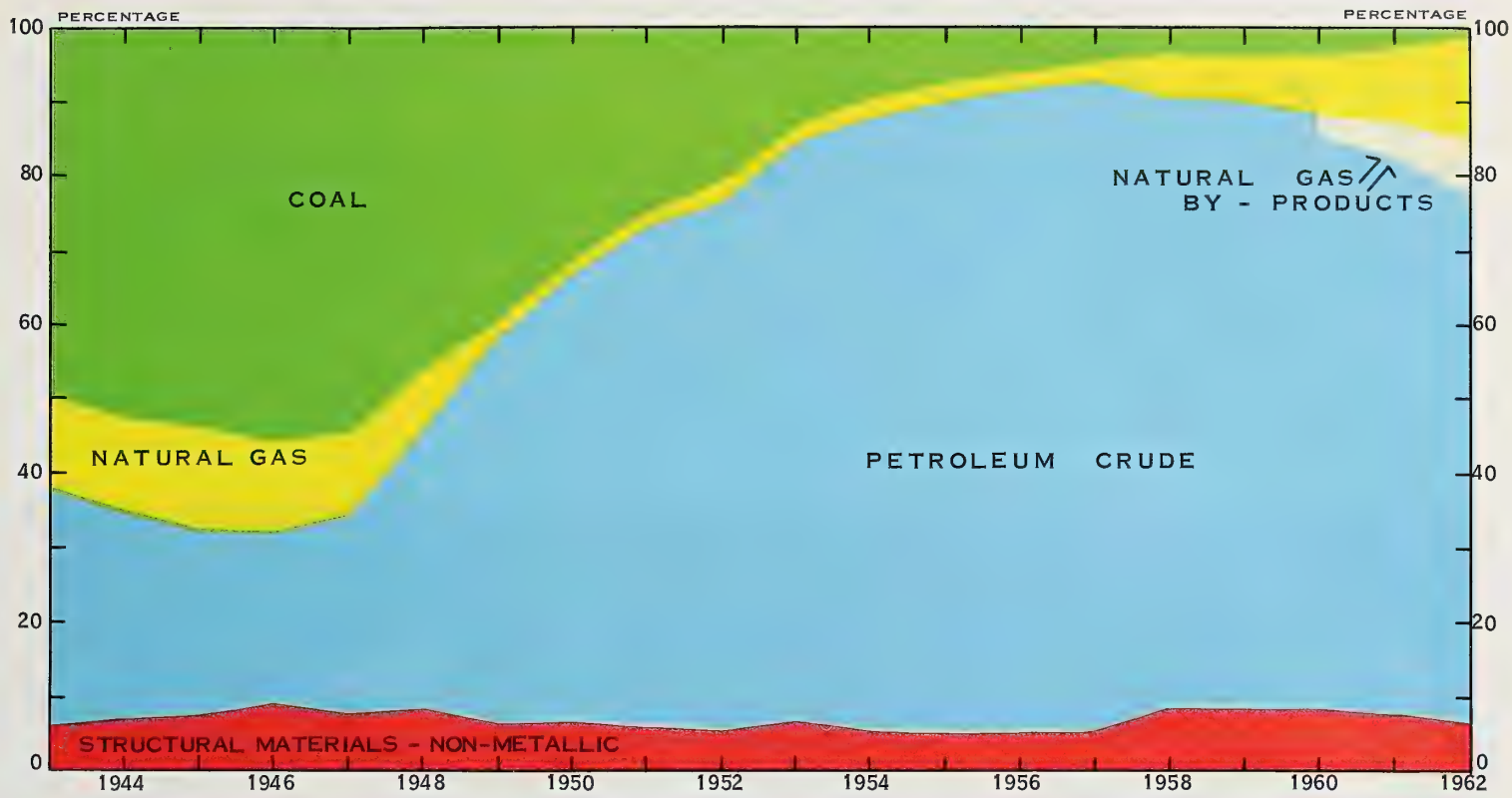
(1) Gas from more than one field. (2) Production from two plants.

TALC

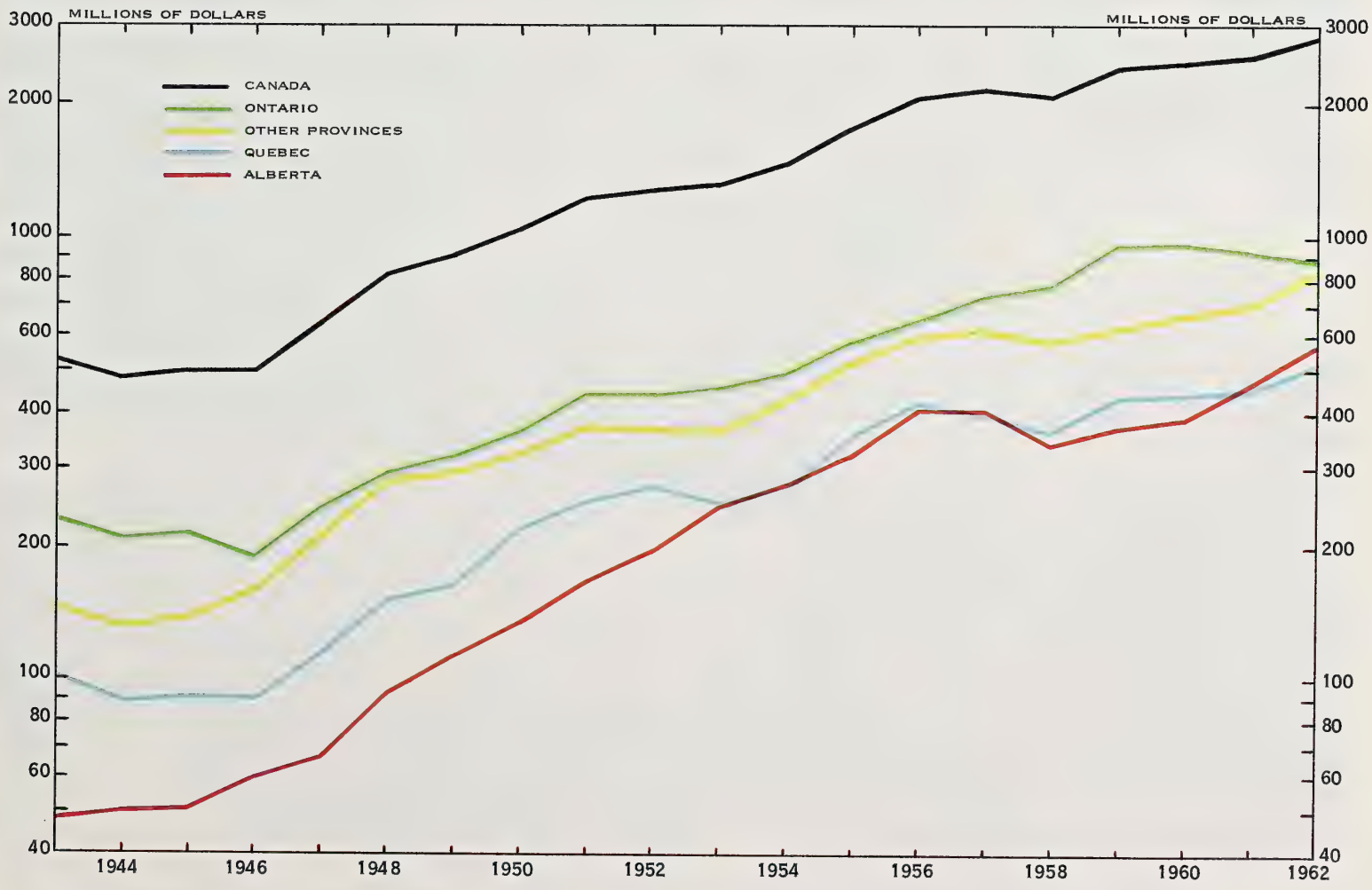
Talc is used in glazes, refractory materials, high frequency insulators, rubber paper; in paint when ground very fine; as a filler or dusting agent in insecticides; and in toilet preparations. None is presently produced in Alberta but a small amount was shipped from Redearth Pass in Banff National Park to ease a wartime shortage.

The talc is present as irregular stringers one to five feet thick and as pods up to two feet across in grey dolomite of the Lower Cambrian Cathedral Formation. Another deposit is in dolomite on Mount Whympier north of Vermilion Pass. Others might be expected elsewhere in dolomites in the mountains.





PERCENTAGE DISTRIBUTION, VALUE OF MINERALS PRODUCED, BY TYPE, ALBERTA, 1943-1962



VALUE OF MINERAL PRODUCTION, CANADA, ONTARIO, ALBERTA, QUEBEC AND OTHER PROVINCES, 1943-1962

## ECONOMIC DEVELOPMENT

Canada's northland is a vast region, rich in mineral resources, timber and sites for hydro power. The area is noted for its rugged terrain and numerous lakes and rivers which, together with the distance factor, present obstacles to the commercial development of the resources. Only a small portion of the wealth of the north has been proven and relatively little has been developed.

Cheap transportation is the key required to unlock the riches of the Canadian north.

It is through development and utilization of various modes of transportation that Alberta has become linked so closely with the western region of the Northwest and Yukon Territories. All commonly used modes of transport, by air, road, rail and water funnel out of Alberta to the remotest regions of the north. Communication networks parallel transportation routes and the recently installed microwave communication systems, which have become such a boon to the north, emanate out of Alberta as well.

Air, major highway and rail routes fan out from Edmonton. The Alaska and the MacKenzie Highways pass through northern Alberta to more distant northern points. The Northern Alberta Railway links Edmonton with Waterways, the southern terminus of an integrated water transportation system extending to the Arctic Ocean.

Transportation routes to the north are being improved and extended constantly. Road links between Hay River and Yellowknife, and between Edmonton and McMurray are under construction. The largest railroad building project to be undertaken in Alberta in recent times links Pine Point in the Northwest Territories with the Northern Alberta Railway existing line near Peace River.

This rail connection, costing about \$86 million, is built primarily to enable Consolidated Mining and Smelting Co. Ltd., to move lead-zinc concentrate from Pine Point, N.W.T., to the Trail, B.C., smelter. Not only will this new transportation link enable new mining operations to begin at Great Slave Lake, but increased agriculture and forestry development will be stimulated in areas adjacent to the track in northern Alberta.

Increased lead-zinc production in the Northwest Territories will tend to balance the composition of its mineral production. Gold, the principal mineral produced in the Northwest Territories, accounts for \$14.8 million of the total value of mineral production of \$17.7 million. Silver, copper and nickel make up the remainder.

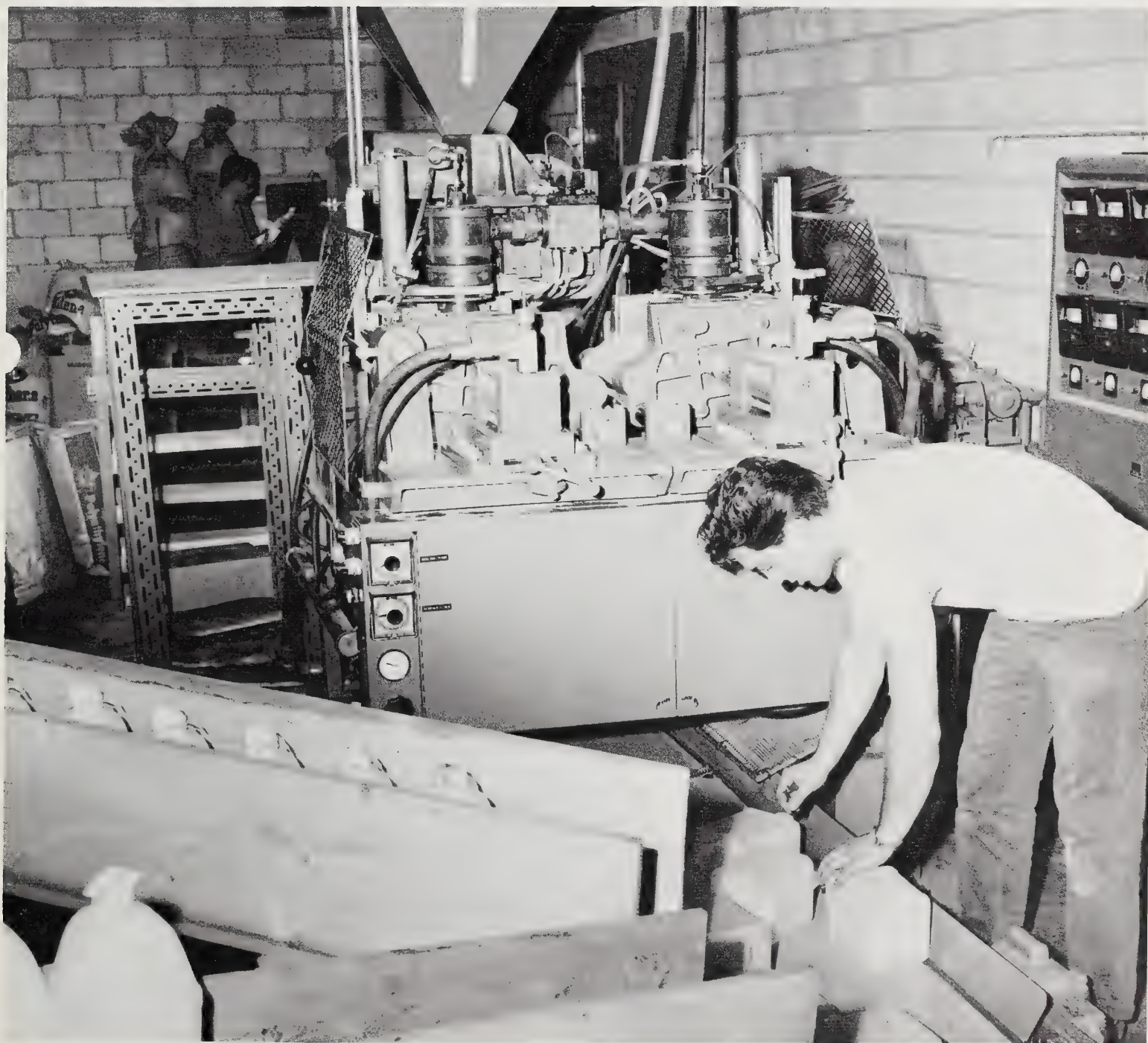
More than half of the total value of mineral production in the Yukon Territory is derived from silver production, which in 1962 amounted to \$7.7 million. Gold, lead and zinc are also of major importance.

The development of a huge iron deposit which straddles the Yukon, Northwest Territories boundary between the Snake and Cranswick Rivers would have the effect of further diversifying and stimulating economic activity in the Territories. The discovery of this deposit, some 420 miles from the nearest seaport, was made while exploring for oil. With reserves in the tens of billion of tons of ore of an iron content of 45% to 50%, the property ranks among the world's largest iron ore deposits. Currently, the magnitude of the reserve and the economic feasibility of developing it is under study.



The tempo of oil exploration activity in the far north has been increasing in recent years. Exploratory drilling has been extended as far north as the Arctic islands. In 1961, the first wildcat well was drilled on Melville Island. Although no oil in commercial quantities was discovered, the geological information obtained is being used in subsequent drilling programmes. During the winter of 1963-64, two wells were drilled on Cornwallis Island, with a third spudded in on Bathurst Island.

As mineral discoveries are coupled with technical improvements in transportation, the future of Canada's northland continues to brighten. Pipelining, large scale air transport, and naval developments such as submarine transports, all hasten the day when the mineral wealth in the north will be tapped, developing this region and strengthening the economy of the nation.



*Increasingly wide acceptance of plastic containers has assured this Edmonton firm's success.*

TABLE 25. MINERAL PRODUCTION IN THE NORTHWEST TERRITORIES - FOR SPECIFIED YEARS, 1947-1962

	GOLD		SILVER		URANIUM		COPPER	
	FINE OZ.	\$	FINE OZ.	\$	LB.	\$	LB.	\$
1947	62,517	2,188,095	45,355	32,655	-	-	-	-
1949	177,493	6,389,748	70,505	52,350	-	-	-	-
1951	212,211	7,819,975	64,228	60,728	-	-	1,934	536
1953	289,929	9,979,356	63,592	53,424	-	-	-	-
1955	321,321	11,092,001	58,477	51,565	-	-	-	-
1957	340,018	11,407,604	69,104	60,376	838,264	8,801,769	330,472	95,672
1958	343,838	11,683,615	72,779	63,179	910,843	9,572,847	868,403	220,748
1959	405,922	13,626,802	70,560	61,937	919,333	8,155,729	986,682	292,157
1960	418,104	14,194,631	79,473	70,659	1,077,211	9,231,698	1,040,000	315,016
1961	407,474	14,449,028	77,890	73,419	-	-	926,480	270,440
1962 *	393,433	14,718,329	72,610	84,590	-	-	609,448	188,928
	NICKEL		PETROLEUM		NATURAL GAS		OTHER \$	TOTAL VALUE \$
	LB.	\$	BBLs.	\$	M.CU.FT.	\$		
1947	-	-	227,474	500,238	-	-	-	2,720,988
1949	-	-	155,528	353,108	65,234	6,523	-	6,801,729
1951	-	-	227,449	399,887	19,333	7,621	-	8,288,747
1953	-	-	316,689	257,251	26,109	10,199	-	10,300,230
1955	-	-	404,219	1,185,780	18,670	6,213	13,262,262 **	25,597,821
1957	1,056,341	734,157	420,844	294,591	19,243	6,446	-	21,400,615
1958	3,866,479	2,648,538	457,086	698,266	24,100	8,197	-	24,895,390
1959	3,841,770	2,689,239	430,319	1,025,914	67,189	22,718	-	25,874,496
1960	3,813,778	2,669,645	468,545	641,219	39,785	12,219	-	27,135,087
1961	3,409,410	2,604,789	516,979	730,160	41,678	17,326	-	18,145,162
1962 *	2,145,267	1,791,298	595,000	892,500	64,000	25,500	-	17,701,145

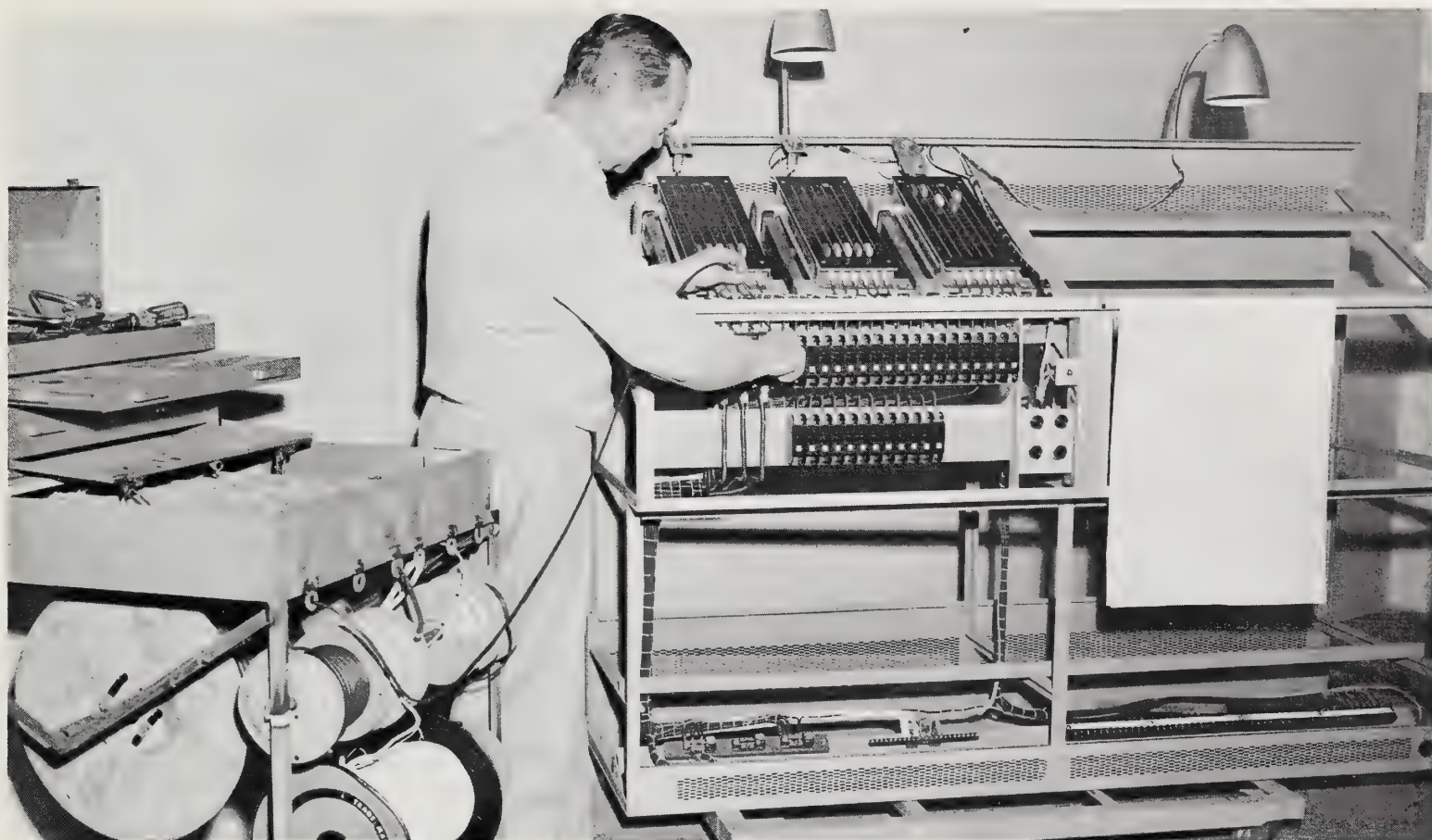
\* PRELIMINARY.      \*\* INCLUDES PITCHBLende AT \$ 13,232,079.

TABLE 26. MINERAL PRODUCTION IN THE YUKON TERRITORY - FOR SPECIFIED YEARS, 1947-1962

	CADMIUM		COAL		COPPER		GOLD	
	LB.	\$	TONS	\$	LB.	\$	FINE OZ.	\$
1947	-	-	-	-	-	-	47,745	1,671,075
1949	-	-	3,156	29,382	-	-	81,970	2,950,920
1951	66,452	178,091	3,696	60,597	-	-	77,504	2,856,022
1953	238,426	476,852	10,661	169,736	-	-	66,080	2,274,474
1955	211,808	360,074	7,040	81,806	-	-	72,201	2,492,379
1957	185,754	315,782	7,731	91,595	-	-	73,962	2,481,425
1958	160,739	244,323	4,344	56,379	-	-	67,745	2,301,975
1959	141,750	181,440	3,879	58,200	-	-	66,960	2,247,847
1960	145,496	206,604	6,470	97,156	-	-	78,115	2,652,004
1961	142,685	228,296	7,703	114,221	880,773	257,098	66,878	2,371,494
1962	140,000	240,800	7,777	117,159	458,170	142,033	54,086	2,023,357
	LEAD		SILVER		ZINC		OTHER \$	TOTAL VALUE \$
	LB.	\$	FINE OZ.	\$	LB.	\$		
1947	1,145,256	156,556	372,051	267,877	-	-	-	2,095,508
1949	5,356,405	846,312	1,562,730	1,160,327	847,246	112,235	-	5,099,176
1951	12,533,071	2,306,085	3,442,788	3,255,156	5,678,999	1,130,121	7,098	9,793,170
1953	31,590,973	4,083,449	6,639,127	5,577,530	18,027,139	2,156,046	475	14,738,562
1955	26,248,786	3,774,575	5,712,219	5,037,035	21,823,307	2,978,881	-	14,724,750
1957	24,985,839	3,488,023	6,484,185	5,665,232	17,119,445	2,069,741	-	14,111,798
1958	21,566,194	2,449,920	6,415,560	5,569,348	15,522,159	1,688,811	-	12,310,756
1959	21,592,456	2,290,960	7,054,632	6,192,556	13,246,532	1,621,375	-	12,592,378
1960	20,286,871	2,166,638	7,217,361	6,416,956	13,402,899	1,789,287	1,553	13,330,198
1961	16,769,815	1,712,198	6,937,086	6,538,897	12,137,418	1,528,100	-	12,750,304
1962	16,252,650	1,612,263	6,581,615	7,667,581	12,509,000	1,513,589	-	13,316,782

\* PRELIMINARY.





*Electrical stage lighting, controlled by a master panel, is produced in Calgary.*



*Mobile homes built in southern Alberta receive special "vapor barrier" and reinforced insulation against winter weather.*



# ENERGY RESOURCES

Alberta's abundant stock of energy resources has been a prominent factor in the economic development of the province, and will be of major importance in the future. Few areas in the world are endowed with such bountiful reserves of such a variety of fossil fuels. These fuels include coal, petroleum, natural gas and natural gas liquids. The reserves, expressed in terms of their energy content, together with comparable Canada figures are shown below:

Total Available Fossil Fuel Energy Resources  
(In trillions of B.T.U. 's)  
December 31, 1962

	<u>Canada</u>	<u>Alberta</u>	<u>Percentage of Total Canada</u>
Natural Gas Liquids	44, 500	34, 600	78%
Natural Gas	4, 300	3, 400	79%
Petroleum	32, 600	29, 000	89%
Petroleum (In Oil Sands)	1, 908, 000	1, 908, 000	100%
Coal	2, 390, 000	1, 158, 000	48%

In terms of their energy content the petroleum reserves of the Oil Sands and Coal completely overshadow the reserves of natural gas, natural gas liquids, and conventional crude petroleum. However, reserves in themselves are of little consequence; commercial production is the important factor.

There has been in the past decade a sharp increase in the production of crude petroleum, natural gas and natural gas liquids. These forms of energy are convenient to use. As raw materials they are easily and cheaply transported by pipelines to distant markets. The availability of fuels for power draws attention to Alberta as a centre for those manufacturing operations which require large quantities of fuel or liquid hydrocarbons at costs which cannot be matched elsewhere in Canada.

Although the coal industry has declined in the wake of the development of oil and gas resources, it appears that the low point has been reached and now the industry is moving towards recovery. From 1952 to 1962, there was a shift from 35% to 75% in the portion of electric power being produced from thermal energy as compared with the portion produced by water power.

In 1962 for every two units of electric energy generated from coal, five were generated by gas. The ratio is expected to be almost 1:1 by 1957; and 2:1 by 1972.

The expectation of the swing is based on the planned installation of large scale electrical generation plants using coal as fuel. Coal, when it can be strip mined in large quantities, as it can in Alberta, becomes a very economic energy source. The transition from gas to coal was effected at a major generating plant at Wabamum in 1962. Subsequent units to be installed at Wabamum will be coal fired.

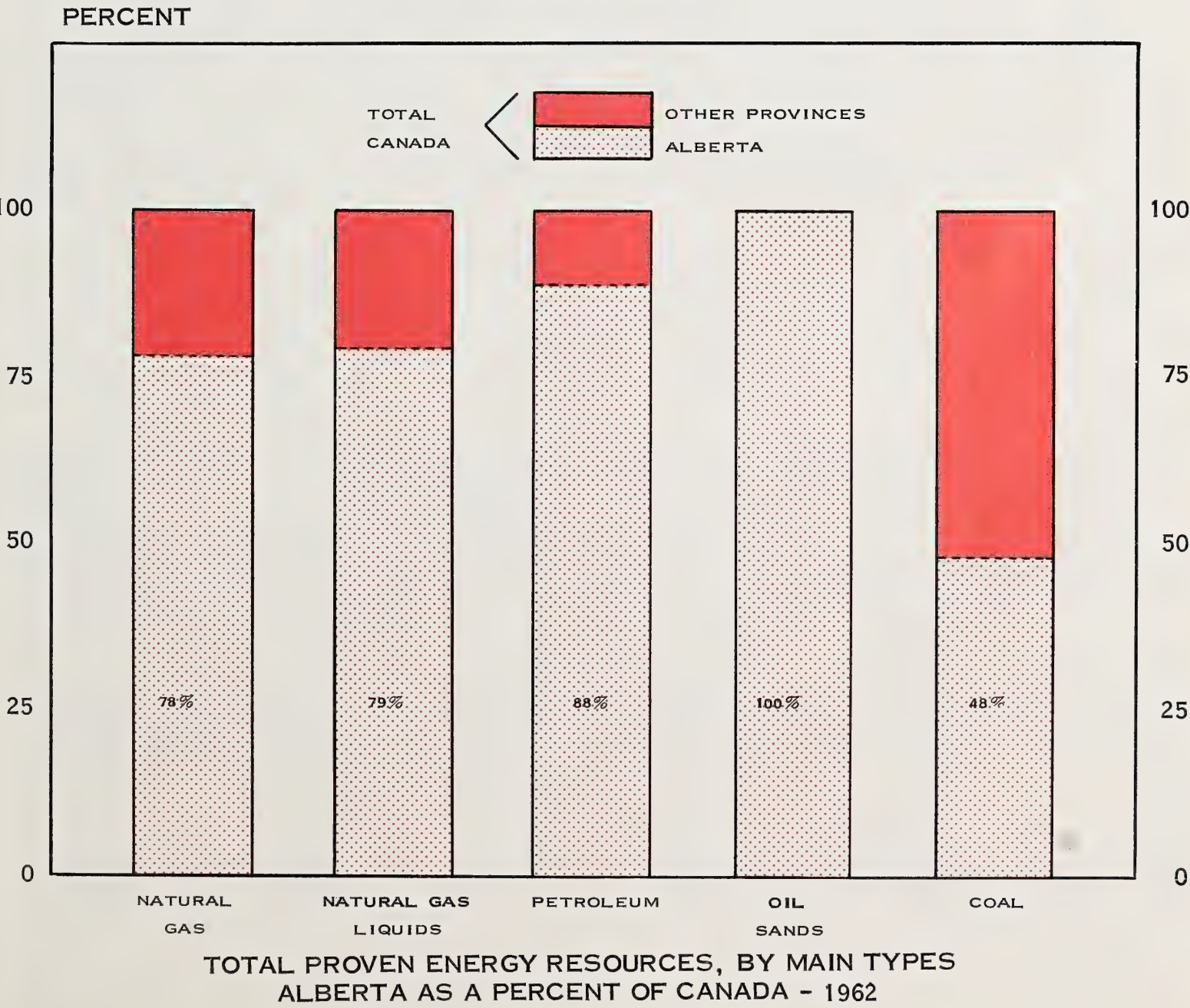


Alberta's single largest reserve of energy is contained in the Athabasca oil sands deposits. From research and development work, undertaken actively in recent years by several major companies, have evolved economical methods to separate crude petroleum from the oil sands. It is expected that, as the demand for crude petroleum grows, the oil sands deposits will be developed commercially in the next decade.

Another energy source utilized in the province is water power. A large portion of the southern area of Alberta is served by electric power generation plants situated on the Bow River. Total installed capacity at eleven stations is 325,000 kilowatts. Four sites, with estimated power generation capacity of 260,000 kilowatts remain to be developed.

The first unit of a 150,000 kilowatt plant on the Brazeau River began operation in 1964; a second is to be installed in 1966. The potential power generation capacity of the Brazeau is estimated at 3 million kilowatts.

The Athabasca, Peace and Slave Rivers have a great water power potential which has not as yet been fully evaluated. Tentative plans are for the installation of a major plant on the Athabasca River in the early 1970's.



# WATER POWER

Alberta's major hydro-electric installations, which are owned by Calgary Power Ltd., are located on the Bow River and its tributaries. These plants serve a large part of the southern portion of the province. The company's total installed capacity at eleven stations in the basin is 325,000 kilowatts. The largest station is in the Spray Development near Canmore (102,500 KW). In addition, four potential sites remaining in the Bow River Basin, estimated at 260,000 KW, are available for development.

Two small sites, totalling 1,710 K.W., have been developed in the province by the Canadian Pacific Railway Company and Northland Utilities.

On the North Saskatchewan River two sites of potential of 200,000 K.W. have been investigated. The first 150,000 K.W. unit of the Big Bend Development on the Brazeau River is to be commissioned in the fall of 1964. A total potential generation of 1,500 million K.W.H. per year is considered available on the Brazeau River in the Big Bend and ten upstream developments, which if fully developed for peak load would aggregate 3 million kilowatts of capacity. Other rivers, somewhat more remote, the Athabasca, Peace and Slave have a great potential as yet not full evaluated.

Table 27. MAXIMUM, MINIMUM AND MEAN DAILY RIVER FLOWS FOR ANNUAL PERIODS  
OCTOBER 1st - SEPTEMBER 30th, 1947-58

(Daily Flow in Cubic Feet Per Second)

Location		1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
South Saskatchewan River at Medicine Hat	Maximum	36,820	90,230	20,260	38,610	59,450	37,910	144,300	38,500	34,990	33,800	25,850	31,400
	Minimum	2,220	542	214	448	1,060	2,690	1,230	1,610	1,330	2,100	1,170	1,520
	Mean	8,450	13,020	4,010	6,630	13,220	10,400	11,490	9,105	8,221	7,995	5,747	7,011
Bow River at Calgary	Maximum	13,160	19,730	7,080	14,820	-	14,400	18,080	13,720	12,860	10,780	9,530	11,530
	Minimum	930	648	500	301	-	1,590	966	232	760	940	1,000	544
	Mean	3,470	3,980	2,360	2,490	-	5,548	5,406	4,055	3,419	3,401	2,845	3,126
Red Deer River at Red Deer	Maximum	18,980	24,120	2,630	8,180	13,300	37,900	21,570	42,620	12,000	10,140	3,950	16,020
	Minimum	306	312	255	136	165	430	200	220	248	177	111	191
	Mean	1,970	2,940	775	949	1,880	2,635	2,280	3,321	2,301	1,427	1,061	1,155
North Saskatchewan River at Edmonton	Maximum	28,600	65,440	32,630	50,330	39,020	109,700	44,900	106,600	30,380	25,460	21,780	51,740
	Minimum	602	1,140	730	430	624	1,030	652	833	1,040	580	506	598
	Mean	7,260	11,260	5,170	6,470	7,420	9,440	8,659	12,170	7,814	6,288	5,822	6,630
Athabasca River at Athabasca	Maximum	70,460	128,800	36,260	55,270	63,410	85,690	64,500	192,300	78,850	60,800	41,110	61,990
	Minimum	8,630	8,800	5,210	4,730	8,630	2,390	1,490	2,300	1,960	2,100	1,610	2,170
	Mean	24,020	39,870	16,010	20,280	26,730	14,240	16,020	24,850	16,560	14,300	12,530	11,580

In Alberta the increasing demand for power is being met to a large degree by thermal-electric plants for which economic sources of fuels -- coal, oil and natural gas -- are in abundant supply.

HYDRO-ELECTRIC PLANTS - ALBERTA

		Year Installed		Head in Feet	Net Capability in K.W.
		First Unit	Latest Unit		
Bow River	102,500 KW	1910	1925	116	278
		1911	1913	72	13,900
		1913	1951	72	18,900
		1929	1954	110	50,900
		1942	1957	340	35,900
		1947	-	150	12,900
		1950	1955	500	1,432
		1951	-	65	3,000
		1951	1960	900	102,800
		1951	1960	320	49,900
		1954	-	50	16,900
		1955	-	127	5,000
		1955	-	207	14,900



## ELECTRIC POWER

Alberta's tremendous fuel resources make it, energy-wise, the richest province in Canada. Its reserves of oil, natural gas, oil sands and coal promise major industrial development. Proven oil and gas reserves are large enough to serve all Canada's immediate needs, with a substantial surplus for export. The province's coal fields contain 47.8 billion tons of mineable coal, more than half of all the mineable coal in Canada.

A prime requirement of any industrial area is a cheap and plentiful supply of electric power. Alberta has the required energy reserves to produce an almost unlimited quantity of power at very low cost. In water power alone Alberta has more than 2 million K.W., of which 325,000 K.W. has been developed - 16 per cent of the total. Another 150,000 K.W. of hydro-generated energy capacity has just been installed at Brazeau Dam.

Ours is a power-hungry age, with energy being perhaps our most important single commodity. Soon Canada's 37 million K.W. of available water power will be approaching complete utilization. Before that point is reached more industries will be pressed to turn to Alberta's coal fields as a source of electrical energy.

On December 31, 1962, Alberta's steam, hydro and internal combustion power plants had a total capacity of 1,092,410 K.W., generating 3,771,785,000 K.W.H. of electricity for 381,952 customers, including farms. Taking into account the province's ordinary growth, the installed capacity of power plants is expected to be 1,742,000 K.W. by 1967, an increase of over 650,000 K.W. From studies made by the Alberta Power Commission it is expected that about three-quarters of this added capacity will be in thermal plants with natural gas or coal as fuel, while the remainder will be in hydro plants.

The additional hydro power required in Alberta will be developed on the Brazeau River, a tributary of the North Saskatchewan. Other sites await development on the Bow River. The Athabasca also has some excellent power sites with a potential of over 1,200,000 K.W., although development of them is not expected to be started before 1970 at the earliest.

While most of Alberta's thermal plants are using natural gas for fuel, the largest, Calgary Power's Wabamun plant, is operating one unit of 150,000 K.W. on coal and will be converting one of the two other units there to coal. Further units, of course, will be installed with coal-fired boilers, obtaining their fuel from the tremendous Wabamun strip mine. In many other areas of the province there are large seams of coal which can be readily stripped, and the large steam stations of the near future will be located on such seams.

Because of the extremely low cost of power generated from strip-mined coal, hydro plants in the province are assuming the role of carrying the peak load, while thermal plants carry the base load. This combination of steam and hydro plants provides Alberta with extremely low-cost power.

An interconnected system of power plants and transmission lines joins all the major points in the province south of the Athabasca River. This system in 1962 had combined capacity of 1,051,200 K.W., generated 3,665,513,000 K.W.H. and served 363,519 customers.



In addition, there is an interconnected system in the Peace River country. Northern Utilities Limited serves practically all the towns north of the Peace River and east of the Smoky River. Canadian Utilities Limited serves nearly all of the towns south of the Peace. By means of a major transmission line, built in 1964, the Peace River system has been linked with that in the rest of the province. The Peace River systems in 1962 had a capacity of 34,100 K.W. in internal combustion power plants, generating 92,542,000 K.W.H. and serving 16,315 customers. Isolated plants serve Jasper, McMurray and Fort Vermilion.

Alberta is criss-crossed by a grid of main high voltage feeders and lesser transmission lines totalling over 14,577 miles. These lines are being extended rapidly to distant points of the vast province, serving industry in many areas.



*A new million dollar industry in Alberta is production of peat moss, shipped as far away as California.*



By the end of 1962, 58, 593 out of some 66, 000 farms were receiving central station service. The Alberta Power Commission estimated that this included some 88 per cent of the non-Indian farms in the province on which someone actually lives. During 1962, the average consumption per farm in Alberta was 4, 769 K.W.H. per year.

The following companies or municipalities generate or retail power to their customers:

COMPANIES OR MUNICIPALITIES GENERATING AND RETAILING  
POWER TO CUSTOMERS

Name of Company	Head Office Address
Calgary Power Ltd. -----	140 - 1st Ave. W., Calgary
Canadian Utilities Limited -----	Milner Building, Edmonton
Northland Utilities Limited -----	Milner Building, Edmonton
East Kootenay Power Company Limited -----	Fernie, B.C.
City of Edmonton -----	Edmonton
City of Lethbridge -----	Lethbridge
City of Medicine Hat -----	Medicine Hat

TOWNS AND CITIES PURCHASING AND RETAILING POWER TO RESIDENTS

City of Calgary -----	Town of Fort Macleod
City of Red Deer-----	Town of Ponoka
Town of Cardston -----	

All towns and villages and the majority of the hamlets in the province, not mentioned above are served at retail by one or other of the various power companies.

In 1960, according to the Dominion Bureau of Statistics, the cost for domestic and farm consumers was 2.22¢ per K.W.H. which gave Alberta the fifth lowest cost in Canada. Alberta commercial and other rates bear essentially the same relation to the cost in the rest of Canada. Rates for large industries using 1, 000 H. P. and up are among the cheapest in Canada.

Comparisons of the cost of power for industry can be highly misleading unless load factors and other conditions of service are taken into account. Because of Alberta's large steam plants, which use very low cost fuel, industries, such as petrochemical plants and refineries which operate continuously at or near full load, can be supplied with very low cost power. Such industries might be well advised to investigate the cost of using Alberta's low cost fuels for power of their own generation, particularly if they need large amounts of process steam. Industrial customers in many cases can take advantage of savings that result from special types of service such as "off-peak", "interruptable" or "at will".

When it comes to the question of location, the cost of power is a relatively insignificant factor to many industries. Where power is a major factor in the cost of a product, industrial plants could be located close to a large steam power station, thus eliminating the cost of transmission.

The availability of low cost fuel in almost unlimited quantities gives reasonable assurance that in Alberta cheap power will be available to industrial users at prices that will compare favourably with those in any other part of Canada. Moreover, because of the large quantities of fuel available, power rates may be expected to remain stable for many years to come, or decline as output increases and technology improves.

Below are outlined some comparisons of industrial power costs in Alberta (1958 and 1962) as compared with similar industries in the United States, (1954 and 1958). The United States costs figures were compiled by the Edison Electrical Institute in 1958 and 1962.

	UNITED STATES INDUSTRIES (1954 and 1958)				ALBERTA INDUSTRIES (1958 and 1962)	
	% Cost of Purchased Power to Value of Product		Cost ¢ per KWH Purchased Power		Cost ¢ per KWH Purchased Power	
	1954	1958	1954	1958	1958	1962
Creamery Butter .....	0.4	0.5	1.70	1.79	1.50	1.87
Beet Sugar .....	1.2	1.1	1.50	1.42	1.72	1.86
Plywood .....	0.9	0.9	1.00	1.09	1.19	1.09
Paper and Board Products .....	0.5	0.3	1.30	1.33	1.17	0.99
Plastic Materials and Elastomers .....	0.8	1.0	1.00	0.92	0.81	0.68
Explosives .....	1.0	0.9	1.00	1.21	0.69	0.71
Fertilizers .....	0.9	0.8	1.20	1.36	0.51	0.49
Petroleum Refining .....	0.6	0.7	0.80	0.78	0.59	0.66
Glass Products, made of purchased glass .....	0.6	0.6	1.30	1.56	1.04	1.01
Cement, Hydraulic .....	6.0	5.7	0.80	0.89	-	0.58
Brick and Hollow Tile .....	2.4	2.5	1.50	1.51	2.22	1.82
Lime .....	3.1	2.8	1.20	1.22	1.11	1.35
Blast Furnaces (Electric) .....	-	2.0	0.90	0.95	0.77	0.63
Steel Works and Rolling Mills (Arc Furnace) .....	-	-	-	-	1.01	1.17
Welded and Heavy-Riveted Pipe .....	0.8	0.6	1.20	1.23	1.26	1.90
Plastic Products .....	1.1	1.1	1.50	1.47	1.24	1.20

Anyone considering establishment of an industry in Alberta would be well advised to contact the Director of Industrial Development in anyone of the cities in the province, or Calgary Power Ltd., 140 - 1st Avenue, South West, Calgary; Canadian Utilities Limited, 10040 - 104th Street, Edmonton, or Northland Utilities Limited, 10040 - 104th Street, Edmonton.



Table 28. PLANT CAPACITY, PEAK LOAD AND NET K.W.H. GENERATED  
CENTRAL ELECTRIC STATIONS, ALBERTA - 1962

PRIVATELY OWNED	Plant Capacity Dec. 31/62 K. W.	Peak Load (K. W.) on Plants During 1962	K. W. H. Gen. Net -- 1962 (Thousands)
Calgary Power Ltd., .....	614,000	508,400	2,214,817
Canadian Utilities Ltd. ....	111,325 (1)	81,700	324,704 (2)
Northland Utilities Ltd. ....	17,685	10,410	39,877
East Kootenay Power Co. Ltd. (3) .....	12,500	11,000	5,941
TOTAL .....	755,510		2,585,339
PUBLICLY OWNED			
City of Edmonton .....	260,000	199,000	785,767
City of Lethbridge .....	33,500	18,900	81,305
City of Medicine Hat .....	43,400	40,100	319,374 (4)
TOTAL .....	336,900		1,186,446
GRAND TOTAL .....	1,092,410		3,771,785

Table 29. PLANT CAPACITY, PEAK LOAD AND K.W.H. GENERATED, BY SOURCE OF POWER  
CENTRAL ELECTRIC STATIONS, ALBERTA - 1962

HYDRO	Plant Capacity Dec. 31/62 K. W.	Peak Load (K. W.) on Plants During 1962	K. W. H. Gen. Net -- 1962 (Thousands)
Calgary Power Ltd. ....	320,000	314,800	950,985
Northland Utilities Ltd. ....	1,432	700	5,201
TOTAL .....	321,432		956,186
STEAM			
Calgary Power Ltd. ....	294,000	279,300	1,263,820
Canadian Utilities Ltd. (5) .....	86,000	66,600	255,220
East Kootenay Power Co. Ltd. (3) .....	12,500	11,000	5,941
City of Edmonton (5) .....	260,000	199,000	785,767
City of Lethbridge (5) .....	33,500	18,900	81,305
City of Medicine Hat .....	43,400	40,100	319,374 (4)
TOTAL .....	729,400		2,711,427
INTERNAL COMBUSTION			
Calgary Power Ltd. ....	-	-	12
Canadian Utilities Ltd. (5) .....	25,325 (1)	15,100	69,484 (2)
Northland Utilities Ltd. ....	16,253	9,510	34,676
TOTAL .....	41,578		104,172
GRAND TOTAL .....	1,092,410		3,771,785

(1) Includes one 1,200 K.W. unit at Fairview.  
(2) Includes some K.W.H. generated at Fairview.  
(3) The East Kootenay Power Plant is located at Sentinel, some two or three miles inside the Alberta border.  
While this energy is generated in Alberta, most of it is exported to British Columbia.  
(4) Includes 219,090,400 K.W.H. sold to Calgary Power Ltd.  
(5) Includes Gas Turbines.

Table 30. RELATIVE POSITIONS OF STEAM, HYDRO AND INTERNAL COMBUSTION  
SOURCES OF POWER - CENTRAL ELECTRIC STATIONS  
ALBERTA - 1962

METHOD OF GENERATION	Per Cent of Power Generated %	Per Cent of Capacity %
Hydro .....	25.4	29.4
Steam and Gas Turbine .....	71.8	66.8
Internal Combustion .....	2.8	3.8
	100.0	100.0
TYPE OF OWNERSHIP		
Publicly Owned .....	31.5	30.8
Privately Owned .....	68.5	69.2
	100.0	100.0

Table 31. DISPOSAL OF ELECTRIC ENERGY, BY TYPE OF CONSUMER, ALBERTA, 1947-1960

FARM SERVICE						DOMESTIC SERVICE						Per
Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	
1947	2,275	8,441,388	214,435	94.26	.056	1947	97,859	84,521,614	3,258,354	33.30	.039	
1948	3,143	6,389,000	326,801	96.32	.051	1948	105,324	101,159,000	3,672,869	34.87	.036	
1949	5,017	10,678,000	437,336	87.17	.041	1949	116,423	119,650,000	4,176,878	35.88	.035	
1950	8,899	17,698,835	598,608	76.10	.034	1950	126,266	146,506,165	4,786,169	37.91	.033	
1951	11,415	28,088,000	822,999	72.10	.029	1951	132,547	171,199,000	5,482,130	41.36	.032	
1952	13,818	37,000,000	1,024,527	74.14	.027	1952	144,541	195,276,000	6,109,507	42.27	.031	
1953	18,634	48,529,000	1,249,533	67.06	.026	1953	155,058	233,623,000	6,965,405	44.92	.030	
1954	24,888	73,016,000	1,763,112	71.42	.024	1954	165,990	282,627,000	8,000,898	48.20	.028	
1955	31,410	91,138,000	2,153,000	68.09	.024	1955	180,553	327,832,000	8,921,000	49.41	.027	
1956	35,005	113,951,000	2,605,000	74.42	.023	1956	187,217	387,309,000	9,968,000	53.24	.026	
1957	37,505	123,944,000	2,813,000	74.82	.023	1957	200,124	440,104,000	10,975,000	54.84	.025	
1958	40,847	145,641,000	3,275,000	80.18	.022	1958	214,317	500,407,000	12,209,000	56.97	.024	
1959	46,258	182,999,000	4,054,000	87.64	.022	1959	229,137	604,493,000	13,936,000	60.82	.023	
1960	49,757	200,490,000	4,412,000	88.67	.022	1960	240,383	666,829,000	14,868,000	61.85	.022	
COMMERCIAL LIGHT						SMALL POWER (under 50 K.W.)**						Per
Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	
1947	22,429	77,081,000	2,947,420	131.41	.038	1947	7,246	46,260,000	1,181,142	163.01	.026	
1948	24,339	90,206,000	3,403,085	139.82	.038	1948	7,656	46,911,000	1,326,013	173.20	.028	
1949	26,056	104,731,000	3,910,042	150.06	.037	1949	8,224	50,199,000	1,434,361	174.41	.029	
1950	27,530	120,235,000	4,506,545	163.70	.037	1950	8,918	66,184,000	1,767,919	198.24	.027	
1951	30,617	137,446,000	5,077,088	165.83	.037	1951	8,964	70,244,000	2,102,817	234.58	.030	
1952	29,478	154,751,000	5,692,184	193.10	.037	1952	9,564	80,442,000	2,211,737	231.26	.027	
1953	33,159	167,527,000	6,188,310	186.63	.037	1953	10,446	89,813,000	2,618,899	250.71	.029	
1954	33,946	189,067,000	6,937,611	204.37	.037	1954	10,796	124,721,000	3,286,828	304.45	.026	
1955	38,876	215,617,000	7,855,000	202.05	.036	1955	11,474	152,001,000	3,746,000	326.48	.025	
1956	37,254	245,244,000	8,660,000	232.46	.035							
1957	38,895	276,551,000	9,459,000	243.19	.034							
1958	40,847	289,204,000	10,360,000	253.63	.035							
1959	41,969	340,339,000	11,612,000	276.68	.034							
1960	44,266	380,580,000	12,403,000	280.19	.033							
LARGE POWER (over 50 K.W.)**						MUNICIPAL POWER**						Per
Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	
1947	720	324,037,000	2,577,636	3,580.05	.008	1947	150	17,361,000	182,612	1,217.41	.011	
1948	727	345,757,000	2,877,713	3,958.34	.008	1948	157	19,815,000	199,474	1,270.54	.010	
1949	782	373,722,000	2,925,075	3,740.51	.008	1949	142	22,107,000	345,719	2,434.64	.016	
1950	952	386,313,000	3,237,404	3,400.63	.008	1950	151	22,480,000	225,496	1,493.35	.010	
1951	1,699	441,030,000	3,932,932	2,314.85	.009	1951	197	21,903,000	229,362	1,164.27	.010	
1952	2,258	503,977,000	4,857,375	2,151.18	.010	1952	221	22,984,000	250,601	1,133.94	.011	
1953	2,714	590,147,000	6,032,197	2,222.62	.010	1953	250	20,168,000	258,360	1,033.44	.013	
1954	3,047	601,423,000	6,123,521	2,009.67	.010	1954	255	25,866,000	296,367	1,162.22	.011	
1955	3,289	660,546,000	6,856,000	2,084.52	.010	1955	260	28,251,000	269,000	1,034.62	.010	
POWER EXCLUDING DELIVERIES TO ELECTRIC BOILERS												Per
Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	
1956	16,426	1,022,309,000	12,916,000	786.31	.013							
1957	18,328	1,144,294,000	14,650,000	799.32	.013							
1958	19,568	1,224,536,000	16,044,000	819.91	.013							
1959	21,540	1,339,800,000	18,145,000	842.39	.014							
1960	20,739	1,446,691,000	19,528,000	941.61	.013							
STREET LIGHTING ONLY												Per
Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	Year	Free Services K.W. Hrs.	Losses K.W. Hrs.				
1947	255	12,297,000	311,312	1,220.83	.025	1947	3,694,000	77,634,000				
1948	280	12,308,000	330,742	1,181.22	.027	1948	3,531,000	103,063,000				
1949	301	13,340,000	364,666	1,211.51	.027	1949	2,420,000	114,095,000				
1950	315	13,830,000	402,262	1,277.02	.029	1950	4,214,000	108,259,000				
1951	355	16,107,000	431,096	1,214.35	.027	1951	5,585,000	113,024,000				
1952	379	16,811,000	474,026	1,250.73	.028	1952	5,803,000	153,503,000				
1953	398	17,805,000	508,191	1,276.86	.029	1953	2,524,000	169,596,000				
1954	404	18,476,000	643,455	1,592.71	.035	1954	2,292,000	196,967,000				
1955	436	45,640,000	762,000	1,747.71	.017	1955	"	240,305,000				
1956	480	25,585,000	742,000	1,545.83	.029	1956	"	255,191,000				
1957	511	29,853,000	1,045,000	2,045.01	.035	1957	"	260,702,000				
1958	527	38,393,000	1,251,000	2,373.81	.033	1958	"	290,792,000				
1959	545	47,096,000	1,495,000	2,743.12	.031	1959	"	350,315,000				
1960	562	53,733,000	1,434,000	2,551.60	.027	1960	"	423,741,000				
TOTAL												Per
Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	Year	Customers No.	K. W. Hours K.W. Hrs.	Revenue Earned \$	Per Customer \$	Per K. W. Hr. \$	
1947	130,934	646,730,000	10,672,911	81.51	.017							
1948	141,876	729,139,000	12,136,697	85.54	.017							
1949	156,945	810,942,000	13,594,077	86.62	.017							
1950	171,998	885,720,000	15,524,403	90.26	.018							
1951	185,794	1,004,626,000	18,078,424	97.30	.018							
1952	200,259	1,171,507,000	20,619,957	102.97	.018							
1953	220,650	1,339,732,000	23,820,895	107.95	.018							
1954	239,126	1,514,455,000	27,051,792	113.13	.018							
1955	266,507	1,761,330,000	30,562,000	114.68	.017							
1956	276,382	2,049,589,000	34,901,000	126.28	.017							
1957	295,453	2,276,390,000	38,952,000	131.84	.017							
1958	316,106	2,498,973,000	43,139,000	136.47	.017							
1959	339,449	2,865,642,000	49,242,000	145.06	.017							
1960	355,707	3,172,044,000	52,645,000	148.00	.017							

\* Excludes power delivered to electric boilers in 1950\*\*



## COAL

Sub-bituminous coals underlie much of the province's Central Plains, while an abundance of bituminous coal (including coking coal) occurs in the Rocky Mountains and the foothills country to the west. While there are considerable reserves of most coal types in Alberta, no true anthracite occurs.

Latest available estimates place Alberta's total mineable reserves of coal at about 47.8 billion tons, or roughly, at 48 per cent of Canada's total. The ultimate reserves are likely to be substantially greater than this. The term "mineable" is defined to mean either bituminous coal occurring in seams three feet or more in thickness and covered by an overburden of less than 2,500 feet, or sub-bituminous coal occurring in seams three feet or more in thickness and covered by less than 1,000 feet of overburden. Further geological prospecting and the development of mining methods capable of economically extracting coal at greater depth are therefore likely to lead to a considerable upward revision of the province's coal resources. Even now, seismic surveys exploring for oil and natural gas are constantly revealing large coal seams in areas previously believed to be barren of coal and adding to the known reserves in regions prospected in the past.

Geologically, Alberta coal is young; coal seams are generally confined to the Cretaceous formations, and, in a few areas, to the Jurassic-Cretaceous and the Cretaceous-Tertiary contacts. The oldest coal occurs in the Kootenay formation which lies at the bottom of the Cretaceous but may be Jurassic in age. Coal in the Blairmore formation is slightly younger being Lower Cretaceous in age. Coal in these strata belongs to the most mature found in the province and outcrops within the front ranges of the Rocky Mountains; it is presently being mined at several places in the Crowsnest Pass as well as Canmore, Mountain Park, Cadomin and Luscar and it is also being developed in the Highwood and Sheep Creek valleys. The two younger coal horizons, designated as the Belly River and Edmonton formations, are of Upper Cretaceous age and underlie (or outcrop) the foothills and plains. The dip of the seams in these horizons varies from zero to a maximum of 5 degrees in the plains, but may occasionally be as high as 20 degrees in the foothills. In the mountains proper, dips as great as 90 degrees are known in some areas.

Coal rank, being as much determined by tectonic conditions as by geological age, decreases steadily as the distance from the Rocky Mountains increases towards the east. For example, Belly River coal at Wainwright is considerably less mature than coal in the same formation in the foothills area. As a rule, lines connecting coals of equal rank run roughly parallel to the Eastern edge of the Rocky Mountains.

Information as to reserves of coal in Alberta as compared with reserves in other Canadian provinces, and the quantities of coal of different types in the various coal areas of Alberta, may be obtained on request. The term "probable reserves" is taken to mean coal that can reasonably be expected to exist. "Possible reserves" relates to coal the existence of which is based on limited geological data, and the recovery of which is problematical because of inferior quality and/or relative inaccessibility. "Recoverable reserves" have, somewhat arbitrarily, been placed at 50 per cent of the mineable reserves. Designation of the coals is based upon a group classification that has been developed by the Research Council of Alberta and that has proved suitable for coal investigations as well as for regulating coal sales.



Both strip and underground methods are used to mine coal in the province, with most mines highly mechanized. During the six year period, 1957-1962, coal mined per man employed has risen from 1,129 to 1,629 tons. Despite this increased efficiency, total output has fallen from the 1946-1949 high of 8.5 million tons per year to just over 2 million tons in 1962. Most of this decline can be attributed to the increased use of oil and natural gas. The use of diesel fuel in railway locomotives has resulted in a loss of the railway market for coal which, at its peak amounted to 3 million tons per year. Cheap natural gas and fuel oils have also replaced coal in space heating. The result has been the steady reduction in the number of operating mines and the number of people employed. In 1957, 93 mines were in operation as compared to 55 in 1962. The number of people employed has dropped from 2,800 to 1,280 for the same period. A trend towards large scale operations is evident. In 1957, 13 mines produced 70% of the total output, whereas in 1962, 70% of the output was produced by 7 mines.

Increasing attention is being given to cheap, strip-mined coal to be burned in thermal power stations. Due to the satisfactory performance of coal in the Forestburg and Wabamun power plants, it is highly probable that coal will capture increasingly larger shares of the electricity generation market.

Recently considerable research and attention has been given to two phases of the coal industry; technological improvements and the non-fuel uses of coal. A new hydraulic mining method has been developed and it is anticipated that production savings of \$2.00 per ton will result. Preliminary estimates on the cost of moving coal by pipeline to the west coast are \$1.00 to \$1.50 per ton cheaper than by rail. Coal can be used as a raw material in the production of chemicals, coke, and also in the manufacturing of industrial structural carbons, synthetic graphite and humic acids.



*Assembly line at a Lethbridge plant in which telephones of various types are manufactured.*



Table 32. PRODUCTION AND DISPOSITION OF COAL - ALBERTA, 1947, 1952, 1957 and 1962

		1947	1952	1957	1962
TOTAL TONNAGE .....	Tons	8, 074, 596	7, 194, 472	3, 155, 354	2, 087, 310
TOTAL VALUATION .....	\$.	36, 317, 343	39, 974, 318	17, 287, 229	9, 983, 327
NO. OF MINES IN OPERATION .....	No.	191	157	93	55
AVERAGE NO. OF MEN EMPLOYED .....	No.	8, 761	6, 936	2, 795	1, 281
DISPOSITION OF COAL					
Railways .....	Tons	2, 504, 604	2, 065, 365	152, 693	32, 003
Alberta .....	Tons	1, 671, 130	1, 234, 307	876, 395	901, 107
Saskatchewan .....	Tons	1, 475, 006	1, 241, 716	680, 297	347, 012
British Columbia .....	Tons	899, 403	1, 021, 484	672, 527	283, 651
Manitoba .....	Tons	583, 414	384, 924	247, 480	153, 561
Ontario .....	Tons	162, 898	126, 381	68, 379	29, 952
Quebec .....	Tons	-	-	165	75
China .....	Tons	27, 731	-	-	-
United States .....	Tons	91, 235	71, 817	85, 687	9, 219
Japan .....	Tons	14, 461	1, 588	1, 137	316, 787
Ships' Bunkers .....	Tons	4, 107	-	-	-
Total Sales .....	Tons	7, 433, 989	6, 147, 582	2, 784, 760	2, 073, 367
Colliery Boilers .....	Tons	173, 575	112, 488	47, 075	3, 458
Colliery Railroads .....	Tons	1, 928	933	1, 016	550
Used Making Briquettes .....	Tons	266, 178	616, 432	255, 131	26, 565
Used Making Fabricoal .....	Tons	-	9, 246	-	-
Used Making Coke .....	Tons	81, 128	3, 474	-	-
Put to Stock .....	Tons	48, 620	512, 115	269, 730	280, 204
Put to Waste .....	Tons	132, 776	345, 667	79, 142	8, 262
Lifted from Stock .....	Tons	39, 915	473, 695	280, 630	262, 558
Lifted from Waste .....	Tons	23, 683	79, 770	870	42, 538
TOTAL OUTPUT .....	Tons	8, 074, 596	7, 194, 472	3, 155, 354	2, 087, 310
COAL BY-PRODUCTS					
Total Tonnage Briquettes Produced .....	Tons	282, 898	653, 596	265, 645	28, 631
Total Tonnage Coke Produced .....	Tons	52, 627	574	-	-
Total Tonnage Char Produced .....	Tons	-	-	-	40
Total Tonnage Fabricoal Produced .....	Tons	-	8, 266	-	-

Table 33. CRUDE OIL PRODUCTION - BY PROVINCES  
Cumulative to 1946 -- Annual 1947 - 1962  
(Thousands of Barrels)

	Alberta	British Columbia	Manitoba	N. W. T.	Saskatchewan	Western Canada	Percent of Total Canada %	Eastern Canada	Percent of Total Canada %	Canadian Total
All Areas Cumulative to Dec. 31, 1946	84,463	-	-	2,233	154	86,850	77.3	25,538	22.7	112,388
1947	6,382	-	-	232	521	7,135	97.9	154	2.1	7,289
1948	10,505	-	-	324	843	11,672	98.3	198	1.7	11,870
1949	19,768	-	-	183	780	20,731	98.7	280	1.3	21,011
1950	27,149	-	-	189	1,040	28,378	99.1	268	0.9	28,646
1951	45,915	-	12	228	1,247	47,402	99.6	213	0.4	47,615
1952	58,919	-	107	314	1,697	61,037	99.7	206	0.3	61,243
1953	76,816	-	656	317	2,791	80,580	99.6	311	0.4	80,891
1954	87,637	-	2,148	370	5,423	95,578	99.6	425	0.4	96,003
1955	113,035	1	4,146	404	11,317	128,903	99.6	537	0.4	129,440
1956	143,910	148	5,787	449	21,078	171,372	99.6	610	0.4	171,982
1957	137,492	345	6,090	383	36,861	181,171	99.6	641	0.4	181,812
1958	113,315	513	5,829	457	44,626	164,740	99.5	792	0.5	165,532
1959	129,962	866	5,056	430	47,443	183,757	99.4	1,019	0.6	184,776
1960	132,875	867	4,764	455	51,866	190,827	99.5	1,019	0.5	191,846
1961	157,812	1,018	4,480	557	55,858	219,725	99.5	1,160	0.5	220,885
1962	165,125	8,914	3,926	679	64,432	243,076	99.5	1,145	0.5	244,221
TOTAL	1,511,080	12,672	43,001	8,204	347,977	1,922,934	98.2	34,516	1.8	1,957,450

Table 34. CRUDE OIL FIELDS PRODUCTION, 1951-1962  
(Millions of Barrels)

	1914-1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	Total
Acheson	1.0	2.0	2.5	2.8	2.7	2.6	2.3	1.7	2.1	1.8	2.2	2.5	26.2
Bonnie Glen	-	0.7	5.6	7.0	7.8	10.3	8.2	4.2	6.0	5.1	6.3	8.7	69.9
Fenn Big Valley	0.2	1.1	3.2	6.5	7.5	8.0	7.8	5.6	6.2	5.5	6.1	6.0	63.7
Golden Spike	1.0	1.3	2.2	2.5	3.4	3.9	2.5	0.9	1.8	1.5	2.9	4.2	28.1
Joffre	-	-	-	0.6	1.7	3.3	3.2	5.4	6.3	6.2	5.7	4.3	36.7
Leduc-Woodbend	39.1	17.8	21.4	20.6	20.4	21.1	18.3	14.9	14.6	13.4	15.1	12.6	229.3
Pembina	-	-	-	0.9	14.9	33.7	38.0	34.6	37.1	39.3	42.7	38.0	279.2
Redwater	38.7	24.0	23.3	24.9	28.5	28.2	21.2	13.1	15.1	12.5	15.4	17.7	262.6
Swan Hills	-	-	-	-	-	-	-	0.1	1.8	4.9	8.4	11.5	26.7
Turner Valley	92.3	2.6	2.4	2.1	2.1	1.8	1.6	1.4	1.3	1.2	1.1	1.2	111.1
Wizard Lake	0.2	1.7	3.1	3.7	3.7	4.8	4.4	1.6	2.7	2.3	3.5	4.6	36.3
Other Fields and Areas	12.5	7.6	13.0	16.0	20.2	26.0	29.3	29.0	33.8	36.8	48.4	53.8	326.4
Production		58.8	76.7	87.6	112.9	143.7	136.8	112.5	128.8	130.5	157.8	165.1	1,496.2
Cumulative Production	185.0	243.8	320.5	408.1	521.0	664.7	801.5	914.0	1,042.8	1,173.3	1,331.1	1,496.2	-

Table 35. ESTIMATED PROVEN REMAINING RESERVES OF LIQUID HYDROCARBONS IN CANADA AT YEAR END, 1950-1962  
(In 35 Imperial Gallon Barrels which are Equivalent to 42 U. S. Gallon Barrels)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Crude Oil													
Northwest Territories	27,300	27,100	26,767	26,442	26,172	53,707	53,258	52,858	52,409	51,970	51,498	51,002	50,412
British Columbia	1,165,000	1,328,000	1,526,389	1,624,496	1,928,479	2,169,985	2,482	2,093	8,958	19,401	44,956	80,382	136,577
Alberta							2,389,296	2,360,933*	2,572,610	2,898,878	3,051,192	3,512,809	3,807,009
Saskatchewan	10,300	21,000	124,247	182,159	222,365	236,872	358,693	420,457	497,372	495,787	502,078	504,277	462,372
Manitoba	-	500	2,106	10,890	29,127	45,211	42,005	34,258	27,500	23,054	20,750	17,545	14,928
Total Western Canada	1,202,600	1,376,600	1,679,509	1,843,987	2,206,143	2,505,775	2,845,734	2,870,599	3,158,849	3,489,090	3,670,474	4,166,015	4,471,298
Eastern Canada	-	-	-	1,435	1,471	3,759	3,636	3,855	7,055	8,034	8,068	7,554	9,404
Total Crude Oil	1,202,600	1,376,600	1,679,509	1,845,422	2,207,614	2,509,534	2,849,370	2,874,454	3,165,904	3,497,124	3,678,542	4,173,569	4,480,702
Natural Gas Liquids													
British Columbia	-	-	-	-	-	-	28,884	23,509	27,576	23,297	32,982	36,222	35,779
Saskatchewan	-	-	-	-	-	-	-	497	34,037	14,925	20,473	19,743	11,540
Alberta	-	11,348	65,374	198,126	208,331	247,085+	251,050	370,654	422,580	463,923	485,066	519,694	648,031
Total Natural Gas Liquids		11,348	65,374	198,126	208,331	247,085+	279,934	394,660	484,193	502,145	538,521	575,659	695,350
Total Proven Reserves	1,202,600	1,387,948	1,744,883	2,043,548	2,415,945	2,756,619	3,129,304	3,269,114	3,650,097	3,999,269	4,217,063	4,749,228	5,176,052

\* Includes any increases that might be attributed to the liquid injection scheme in the Pembina field.





Table 33. CRUDE OIL PRODUCTION - BY PROVINCES  
Cumulative to 1946 -- Annual 1947 - 1962  
(Thousands of Barrels)

	Alberta	British Columbia	Manitoba	N. W. T.	Saskatchewan	Western Canada	Percent of Total Canada %	Eastern Canada	Percent of Total Canada %	Canadian Total
All Time Cumulative to Dec. 31, 1946	84,463	-	-	2,233	154	86,850	77.3	25,538	22.7	112,388
1947	6,382	-	-	232	521	7,135	97.9	154	2.1	7,289
1948	10,505	-	-	324	843	11,672	98.3	198	1.7	11,870
1949	19,768	-	-	183	780	20,731	98.7	280	1.3	21,011
1950	27,149	-	-	189	1,040	28,378	99.1	268	0.9	28,646
1951	45,915	-	12	228	1,247	47,402	99.6	213	0.4	47,615
1952	58,919	-	107	314	1,697	61,037	99.7	206	0.3	61,243
1953	76,816	-	656	317	2,791	80,580	99.6	311	0.4	80,891
1954	87,637	-	2,148	370	5,423	95,578	99.6	425	0.4	96,003
1955	113,035	1	4,146	404	11,317	128,903	99.6	537	0.4	129,440
1956	143,910	148	5,787	449	21,078	171,372	99.6	610	0.4	171,982
1957	137,492	345	6,090	383	36,861	181,171	99.6	641	0.4	181,812
1958	113,315	513	5,829	457	44,626	164,740	99.5	792	0.5	165,532
1959	129,962	866	5,056	430	47,443	183,757	99.4	1,019	0.6	184,776
1960	132,875	867	4,764	455	51,866	190,827	99.5	1,019	0.5	191,846
1961	157,812	1,018	4,480	557	55,858	219,725	99.5	1,160	0.5	220,885
1962	165,125	8,914	3,926	679	64,432	243,076	99.5	1,145	0.5	244,221
TOTAL	1,511,080	12,672	43,001	8,204	347,977	1,922,934	98.2	34,516	1.8	1,957,450

Table 34. CRUDE OIL FIELDS PRODUCTION, 1951-1962  
(Millions of Barrels)

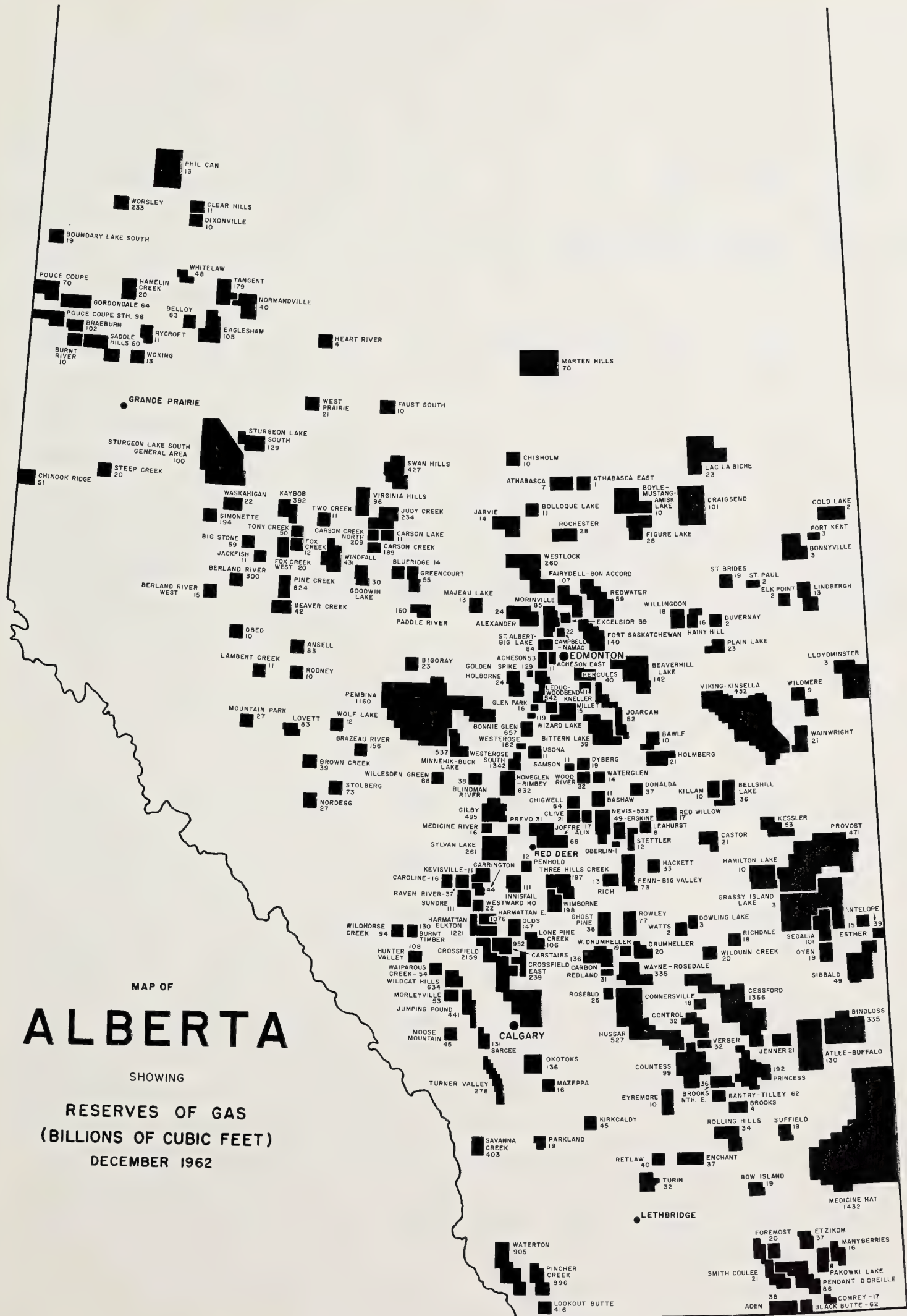
	1914-1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	Total
Acheson	1.0	2.0	2.5	2.8	2.7	2.6	2.3	1.7	2.1	1.8	2.2	2.5	26.2
Bonnie Glen	-	0.7	5.6	7.0	7.8	10.3	8.2	4.2	6.0	5.1	6.3	8.7	69.9
Fenn Big Valley	0.2	1.1	3.2	6.5	7.5	8.0	7.8	5.6	6.2	5.5	6.1	6.0	63.7
Golden Spike	1.0	1.3	2.2	2.5	3.4	3.9	2.5	0.9	1.8	1.5	2.9	4.2	28.1
Joffre	-	-	-	0.6	1.7	3.3	3.2	5.4	6.3	6.2	5.7	4.3	36.7
Leduc-Woodbend	39.1	17.8	21.4	20.6	20.4	21.1	18.3	14.9	14.6	13.4	15.1	12.6	229.3
Pembina	-	-	-	0.9	14.9	33.7	38.0	34.6	37.1	39.3	42.7	38.0	279.2
Redwater	38.7	24.0	23.3	24.9	28.5	28.2	21.2	13.1	15.1	12.5	15.4	17.7	262.6
Swan Hills	-	-	-	-	-	-	-	0.1	1.8	4.9	8.4	11.5	26.7
Turner Valley	92.3	2.6	2.4	2.1	2.1	1.8	1.6	1.4	1.3	1.2	1.1	1.2	111.1
Wizard Lake	0.2	1.7	3.1	3.7	3.7	4.8	4.4	1.6	2.7	2.3	3.5	4.6	36.3
Other Fields and Areas	12.5	7.6	13.0	16.0	20.2	26.0	29.3	29.0	33.8	36.8	48.4	53.8	326.4
Production		58.8	76.7	87.6	112.9	143.7	136.8	112.5	128.8	130.5	157.8	165.1	1,496.2
Cumulative Production	185.0	243.8	320.5	408.1	521.0	664.7	801.5	914.0	1,042.8	1,173.3	1,331.1	1,496.2	-

Table 35. ESTIMATED PROVEN REMAINING RESERVES OF LIQUID HYDROCARBONS IN CANADA AT YEAR END, 1950-1962  
(In 35 Imperial Gallon Barrels which are Equivalent to 42 U.S. Gallon Barrels)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Crude Oil													
Northwest Territories	27,300	27,100	26,767	26,442	26,172	53,707	53,258	52,858	52,409	51,970	51,498	51,002	50,412
British Columbia							2,482	2,093	8,958	19,401	44,956	80,382	136,577
Alberta	1,165,000	1,328,000	1,526,389	1,624,496	1,928,479	2,169,985	2,389,296	2,360,933*	2,572,610	2,898,878	3,051,192	3,512,809	3,807,009
Saskatchewan	10,300	21,000	124,247	182,159	222,365	236,872	358,693	420,457	497,372	495,787	502,078	504,277	462,372
Manitoba	-	500	2,106	10,890	29,127	45,211	42,005	34,258	27,500	23,054	20,750	17,545	14,928
Total Western Canada	1,202,600	1,376,600	1,679,509	1,843,987	2,206,143	2,505,775	2,845,734	2,870,599	3,158,849	3,489,090	3,670,474	4,166,015	4,471,298
Eastern Canada	-	-	-	1,435	1,471	3,759	3,636	3,855	7,055	8,034	8,068	7,554	9,404
Total Crude Oil	1,202,600	1,376,600	1,679,509	1,845,422	2,207,614	2,509,534	2,849,370	2,874,454	3,165,904	3,497,124	3,678,542	4,173,569	4,480,702
Natural Gas Liquids													
British Columbia	-	-	-	-	-	-	28,884	23,509	27,576	23,297	32,982	36,222	35,779
Saskatchewan	-	-	-	-	-	-	-	497	34,037	14,925	20,473	19,743	11,540
Alberta	-	11,348	65,374	198,126	208,331	247,085*	251,050	370,654	422,580	463,923	485,066	519,694	648,031
Total Natural Gas Liquids	-	11,348	65,374	198,126	208,331	247,085*	279,934	394,660	484,193	502,145	538,521	575,659	695,350
Total Liquid Hydrocarbons													
	1,202,600	1,387,948	1,744,883	2,043,548	2,415,945	2,756,619	3,129,304	3,269,114	3,650,097	3,999,269	4,217,063	4,749,228	5,176,052

\* Includes a small amount of gas that might be attributed to the liquid injection scheme in the Pembina field.

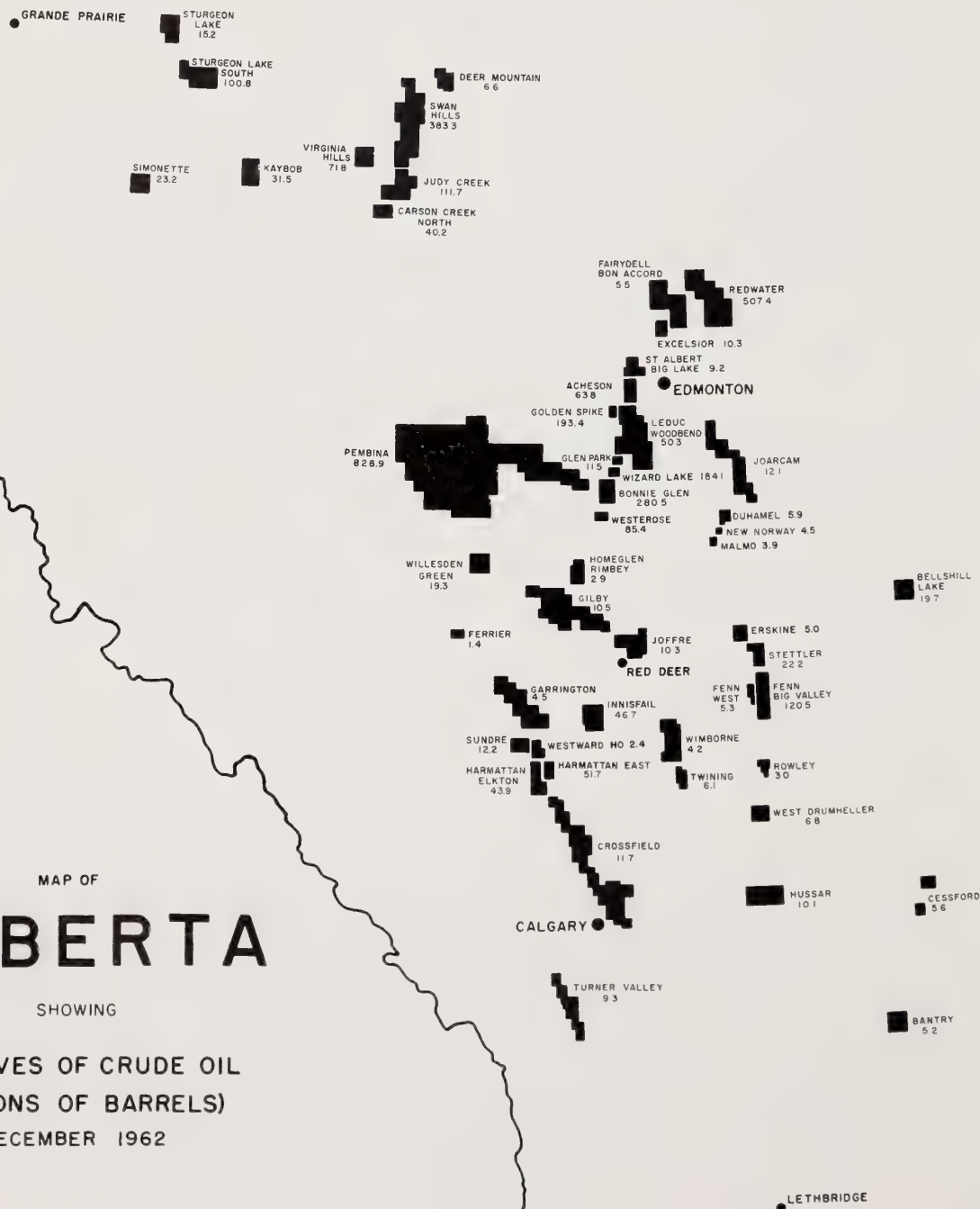




MAP OF  
**ALBERTA**  
SHOWING  
RESERVES OF GAS  
(BILLIONS OF CUBIC FEET)  
DECEMBER 1962

MAP OF  
**ALBERTA**

SHOWING  
RESERVES OF CRUDE OIL  
(MILLIONS OF BARRELS)  
DECEMBER 1962







MAP OF  
**ALBERTA**

SHOWING  
RESERVES OF CRUDE OIL  
(MILLIONS OF BARRELS)  
DECEMBER 1962





TABLE 36.      PROVINCIAL GOVERNMENT REVENUE FROM MINERAL RESOURCES  
- ALBERTA -  
BY FISCAL YEARS, 1947-48 TO 1961-62

	1947-48	1948-49	1949-50	1950-1951	1951-52	1952-53	1953-54	1954-55
	\$	\$	\$	\$	\$	\$	\$	\$
COAL								
FEES AND RENTALS .....	121,936	177,788	191,726	181,001	215,344	176,175	148,753	52,033
ROYALTIES .....	288,215	646,540	651,568	623,312	437,411	379,492	286,569	230,907
SUNDRY REVENUE .....	5,798	7,398	6,183	5,335	5,209	4,526	3,902	3,068
PETROLEUM AND NATURAL GAS								
FEES AND RENTALS .....	759,702	2,353,064	6,255,178	9,779,641	15,380,550	19,682,345	24,597,994	20,654,727
ROYALTIES .....	875,239	1,753,573	3,611,118	5,189,993	11,038,089	13,510,952	18,565,126	20,214,579
CROWN RESERVE SALES .....	-	8,911,803	23,231,448	29,080,632	13,211,289	23,527,444	53,236,117	40,013,320
SALT								
FEES AND RENTALS .....	6,721	7,002	564	3,129	1,006	1,006	1,006	1,006
ROYALTIES .....	5,980	4,886	2,025	9,231	4,895	6,807	7,063	7,978
QUARRYING								
FEES AND RENTALS .....	1,010	1,155	1,019	1,177	291	227	325	186
ROYALTIES .....	5,546	15,917	29,939	36,486	27,908	29,310	38,798	41,181
QUARTZ								
FEES AND ROYALTIES .....	88	215	378	630	854	3,826	15,751	3,283
PLACER								
FEES AND ROYALTIES .....	150	23	-	325	43	30	30	1,510
BITUMINOUS SANDS								
FEES, RENTALS AND ROYALTIES .....	-	-	15,195	7,738	7,738	53,373	63,927	43,167
OIL SANDS								
FEES AND RENTALS .....	-	-	-	-	-	-	-	-
MINING MISCELLANEOUS								
FEES, RENTALS AND ROYALTIES .....	14,286	22,787	218,265	130,682	303,468	224,680	191,976	105,630
MINERAL TAXATION ACT								
NON-PRODUCING AREA TAX .....	294,040	275,774	297,883	307,063	323,186	310,285	283,853	277,843
PRODUCING AREA TAX .....	179,694	290,170	452,838	526,030	444,294	572,671	717,353	1,031,923
CERTIFICATE FEES .....	101	125	287	511	2,320	3,204	1,056	1,467
PIPE LINE ACT SUNDRY REVENUE .....	-	-	-	-	-	-	-	-
ADMINISTRATION SUNDRY REVENUE .....	*	*	21,916	34,734	61,946	83,735	90,414	69,269
TOTAL .....	2,558,506	14,468,220	34,987,530	45,917,650	41,465,841	58,570,088	98,250,013	82,753,077
		1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
		\$	\$	\$	\$	\$	\$	\$
COAL								
FEES AND RENTALS .....		51,930	68,287	76,810	60,651	59,706	48,840	67,999
ROYALTIES .....		216,840	165,135	109,223	99,676	90,303	72,821	80,485
SUNDRY REVENUE .....		2,816	2,793	3,040	2,505	2,452	2,535	2,458
PETROLEUM AND NATURAL GAS								
FEES AND RENTALS .....		21,370,260	25,819,815	31,044,071	29,833,947	32,681,664	30,898,834	32,403,668
ROYALTIES .....		28,794,874	37,292,514	32,812,135	25,446,506	27,327,144	27,741,036	39,198,163
CROWN RESERVE SALES .....		76,074,733	69,050,860	58,641,836	53,609,952	81,322,977	44,127,513	44,290,642
SALT								
FEES AND RENTALS .....		1,006	1,011	1,011	1,006	1,006	1,006	1,006
ROYALTIES .....		9,869	10,051	9,860	10,130	10,677	11,725	12,368
QUARRYING								
FEES AND RENTALS .....		173	213	118	110	165	125	135
ROYALTIES .....		39,552	53,590	45,540	50,194	58,825	56,116	55,642
QUARTZ								
FEES AND ROYALTIES .....		1,945	1,180	1,040	4,080	680	810	880
PLACER								
FEES AND ROYALTIES .....		1,118	1,346	500	690	490	250	10
BITUMINOUS SANDS								
FEES, RENTALS AND ROYALTIES .....		199,181	91,437	487,666	366,693	548,903	672,045	767,431
OIL SANDS								
FEES AND RENTALS .....		-	-	-	-	-	-	178,841
MINING MISCELLANEOUS								
FEES, RENTALS AND ROYALTIES .....		186,317	107,962	205,130	135,591	136,163	129,537	139,164
MINERAL TAXATION ACT								
NON-PRODUCING AREA TAX .....		264,497	272,884	282,058	306,179	337,453	303,051	277,993
PRODUCING AREA TAX .....		1,031,802	1,070,381	1,232,795	1,115,479	909,800	957,673	991,779
CERTIFICATE FEES .....		914	1,102	1,057	472	545	339	545
PIPE LINE ACT SUNDRY REVENUE .....		-	-	-	-	6,298	10,110	10,219
ADMINISTRATION SUNDRY REVENUE .....		51,489	75,903	67,642	66,789	51,368	55,668	78,745
TOTAL .....		128,299,316	134,086,464	125,021,532	111,110,650	143,546,619	105,090,034	118,558,173

\* FIGURES NOT AVAILABLE PRIOR TO APRIL 1949 WHEN REVENUE FROM MINERALS WAS ADMINISTERED BY THE DEPARTMENT OF LANDS AND MINES.

## OIL & GAS INDUSTRY

The ingredients for economic progress are capital, entrepreneurial skill, and resources. The rate of the progress which has taken place in Canada in recent years has resulted from the joint combination of domestic capital and entrepreneurial skill, supplemented by foreign funds and technology, in the development of the nation's rich indigenous stock of resources.

Energy resources are essential to the development of an industrial complex. Alberta's energy resources in the form of crude petroleum and natural gas have been important to provincial and national industrial development.

Oil and gas pipelines emanating from Alberta span the prairies eastward and the Rocky Mountains westward to supply both central Canada and the west coast with vital sources of energy. Pipelines extending south east and south west carry oil and gas to major American industrial and population areas.

In 1963 the value of production of crude oil and natural gas and related products amounted to over 90% of the \$637 million worth of minerals produced in Alberta. Daily crude oil production averaged 470,000 barrels: about 47% of the permissible rate. Of the 189.2 million barrels produced 43% was sold to users in other Canadian provinces; U.S. customers received 39% of the total. Of the 1963 net provincial gas production 45% was marketed in Canada, and 33% was exported to U.S. markets. The balance was used as production fuel or wasted. Exports of crude oil and natural gas to U.S. were valued at nearly \$320 million in 1963. Continued increases though not of equal magnitude to those achieved in the early 1960's, are in prospect for the next few years.

Canada could be wholly self sufficient as far as crude oil requirements are concerned. Canadian imports of oil, the bulk of which come from Venezuela, range around 90 million bbls. valued at \$230 million per annum. The higher costs involved in moving western oil to the Montreal and east coast consuming areas make it difficult for Alberta oil to supply the markets of eastern Ontario, Quebec and the Maritimes. Alberta natural gas however is transported as far east as Montreal.

The year 1947 stands out in the economic history of Alberta. It was in 1947 that the Leduc oilfield was discovered. Subsequent developments have literally transformed the economy of the province. The economy is diversified; the rate of population growth is higher than that of any other province in Canada. Much of the industrial progress which has taken place in Alberta since the war is either directly or indirectly related to the development of the oil and gas industry.

Oil was produced in Alberta for many years prior to 1947. In 1925 the Wainwright field came into production with a heavy gravity crude similar to that which was later discovered in the Vermilion and Lloydminster fields. In 1936 the first major light crude oil discovery was made at Turner Valley, which until then had produced only natural gas and naphtha gasoline. As a result most large oil companies established their western headquarters in Calgary. The Leduc was the first major field to be found on the western plains in post war years and the discovery led to many more.

An Oil and Gas Conservation Board was established in 1938 to eliminate wasteful production practices which had been particularly apparent in the Turner Valley field. By the time Leduc and subsequent fields were in production a regulatory body



had a backlog of practical experience in proration and conservation. The experience proved to be of inestimable value in ensuring orderly development of provincial oil and gas resources.

Oil and gas firms have invested more than \$4.5 billion in Alberta since 1947. This investment has taken many forms: refineries, gas processing plants, leases and reservations, pipelines, and expenditures on exploration, development and production.

More than 20,000 Albertans are employed directly in the oil and gas industry. Many more people have been afforded employment in manufacturing and service industries which owe their existence directly to the oil and gas industry.

The oil and gas industry provided the major impetus to the economic development which has taken place since 1947. The increase in population has stimulated the construction industry, made viable many manufacturing industries which are related to serving the needs of consumers not connected with the oil industry, and generated the needs for service industries.

The population as a whole has benefited directly through revenues received by the provincial government from the sales of Crown reserves for oil and gas development; from the sales of leases and permits; and from royalties and fees. Direct provincial government revenues from the development of the oil and gas resources between 1947 and 1963 exceeded \$1,000,000,000. These revenues have enabled the government to raise the level of educational, health, cultural and recreational amenities and services. Other, perhaps more important, effects have been the assurance of a stable business climate and favourable long term prospects of attractive municipal property tax rates.

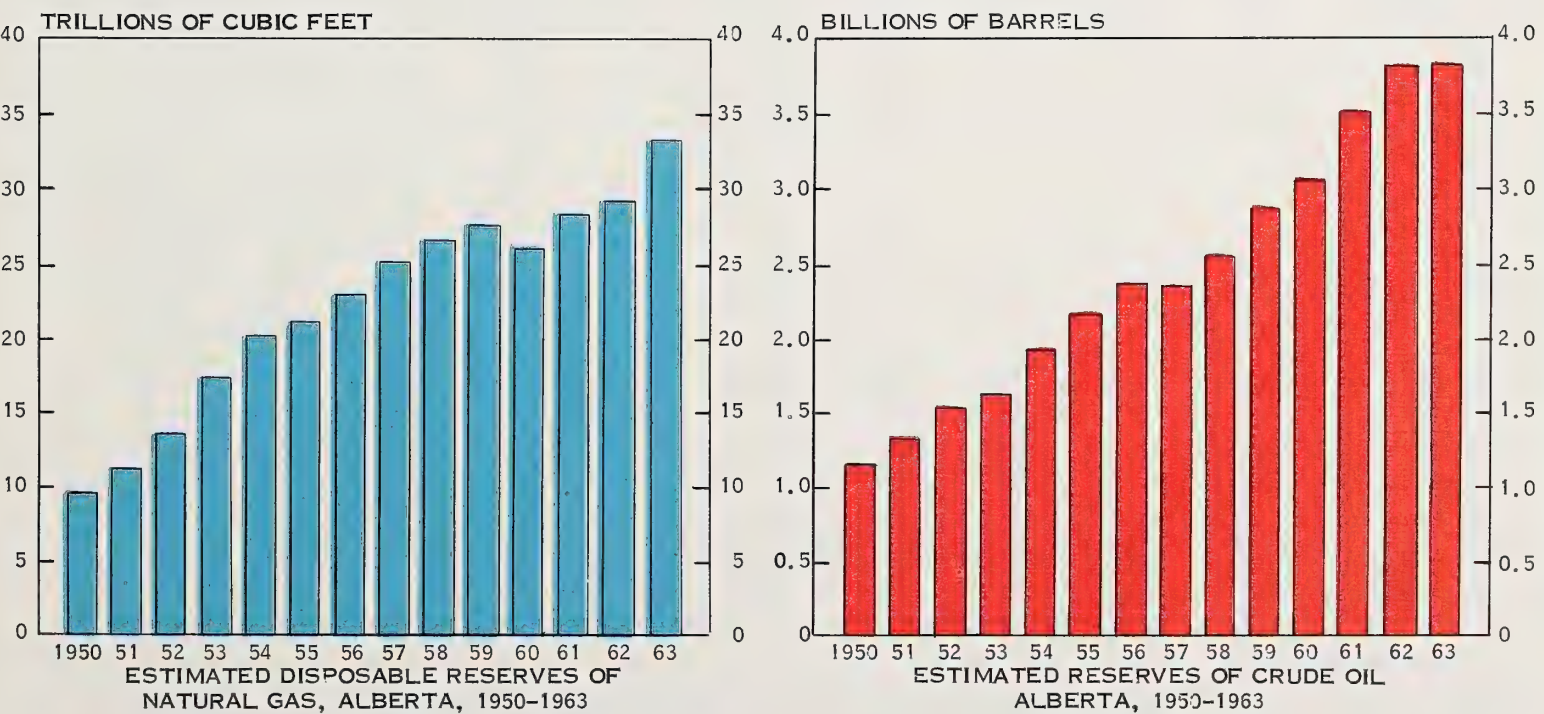
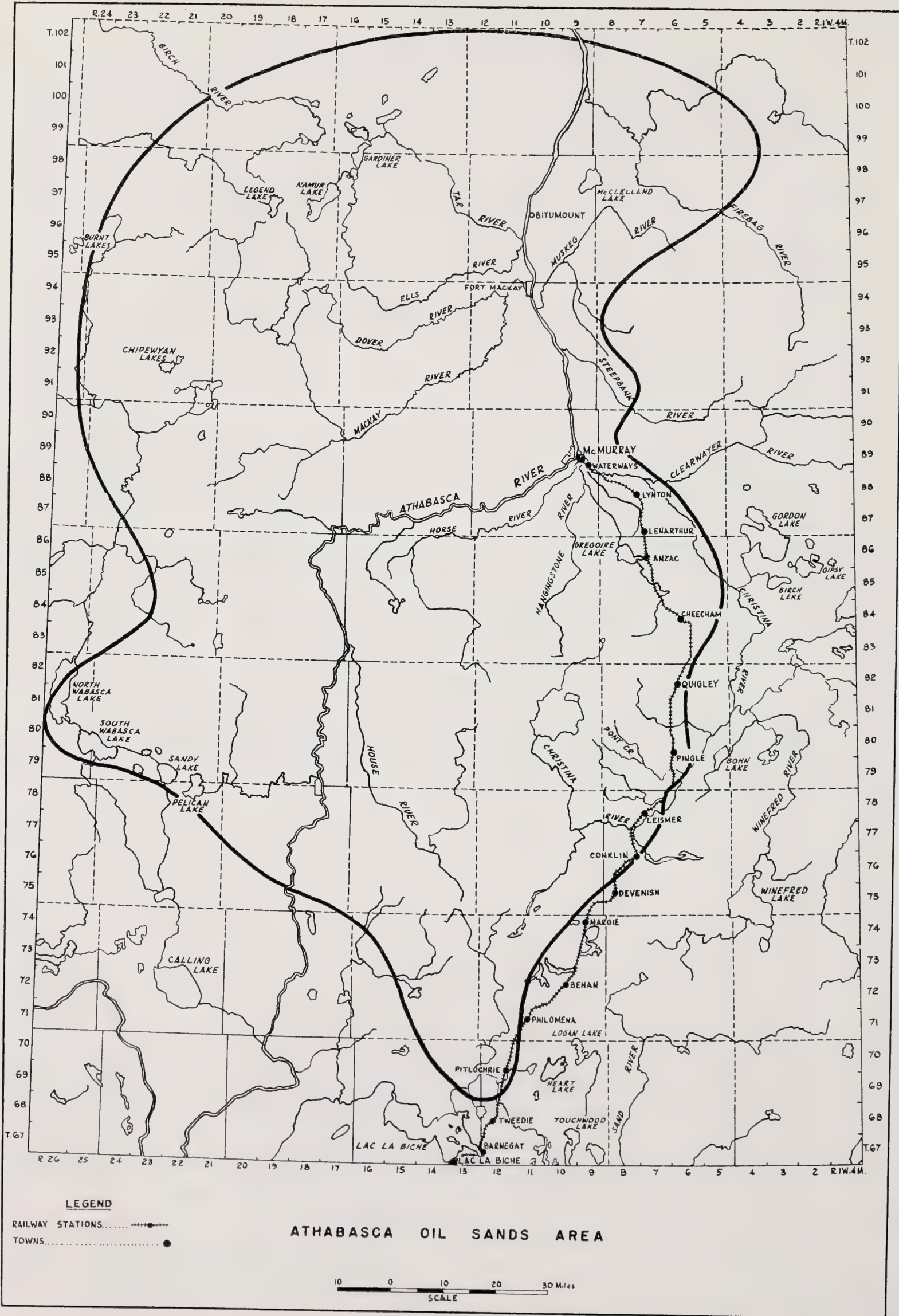


TABLE 37. OIL INDUSTRY STATISTICS - ALBERTA, 1947-1962

		1947	1948	1949	1950	1951	1952	1953	1954
FOOTAGE DRILLED									
DEVELOPMENT .....	FT.	546,005	1,199,839	2,256,931	3,110,588	3,284,444	4,239,012	4,249,826	3,574,240
OUTPOST .....	FT.	-	-	-	-	-	527,970	323,034	283,109
EXPLORATION .....	FT.	336,353	463,848	944,966	1,219,610	2,278,221	1,864,547	1,850,029	1,817,410
TOTALS .....	FT.	882,358	1,663,687	3,201,897	4,330,198	5,562,665	6,631,529	6,422,889	5,674,759
WELL COMPLETIONS									
DEVELOPMENT									
OIL .....	NO.	100	206	525	719	691	830	795	579
GAS .....	NO.	30	14	20	19	21	69	82	70
DRY .....	NO.	21	28	39	50	71	161	169	104
SERVICE WELLS .....	NO.	-	-	-	-	-	-	-	2
OUTPOST									
OIL .....	NO.	-	-	-	-	-	67	43	34
GAS .....	NO.	-	-	-	-	-	11	24	15
DRY .....	NO.	-	-	-	-	-	36	35	23
EXPLORATION									
OIL .....	NO.	7	11	15	34	68	49	47	60
GAS .....	NO.	6	8	15	21	94	74	89	55
DRY .....	NO.	58	107	179	169	293	332	277	236
TOTALS .....	NO.	222	374	793	1,012	1,238	1,629	1,561	1,178
TOTAL OIL.....	NO.	107	217	540	753	759	946	885	673
TOTAL GAS .....	NO.	36	22	35	40	115	154	195	140
TOTAL DRY.....	NO.	79	135	218	219	364	529	481	363
SERVICE WELLS.....	NO.	-	-	-	-	-	-	-	2
PRODUCING OIL WELLS .....	NO.	502	717	1,242	1,995	2,731	3,661	4,504	5,068
PRODUCING GAS WELLS .....	NO.	177	199	234	303	331	362	404	470
CAPPED GAS WELLS .....	NO.	119	114	109	75	157	259	393	491
CRUDE OIL PRODUCTION .....	BBLs.	6,382,065	10,504,928	19,767,845	27,149,369	45,915,403	58,829,029	76,696,276	87,585,011
AVERAGE DAILY PRODUCTION .....	BBLs.	20,000	36,000	53,000	79,000	122,000	180,000	246,000	278,000
POSSIBLE DAILY PRODUCTION .....	BBLs.	20,000	36,000	150,000	189,000	214,000	276,000	317,000	365,000
MARKET DISTRIBUTION ***									
PRAIRIES .....	BBLs.	6,341,306	10,441,787	19,377,489	25,121,337	31,289,876	36,761,805	39,831,259	37,695,259
BRITISH COLUMBIA .....	BBLs.	-	-	-	-	-	508,861	2,680,024	13,463,944
OTHER CANADIAN AND EXPORTS .....	BBLs.	-	-	-	-	14,129,328	21,088,781	25,630,021	36,690,387
NATURAL GAS PRODUCTION .....	MCF.	53,321,858	60,739,364	68,135,929	74,933,207	83,784,797	95,834,771	114,147,745	135,545,629
CONSUMED IN ALBERTA*.....	MCF.	39,077,953	45,085,378	47,645,861	56,367,452	63,200,771	62,385,008	71,156,973	88,633,623
CONSUMED OUTSIDE ALBERTA .....	MCF.	-	-	-	-	268,061	8,551,128	10,067,095	7,687,977
		1955	1956	1957	1958	1959	1960	1961	1962
FOOTAGE DRILLED									
DEVELOPMENT .....	FT.	6,201,839	7,695,927	4,811,872	6,506,974	6,112,071	7,210,648	6,986,248	5,945,022
OUTPOST .....	FT.	269,549	215,523	283,641	417,073	339,886	588,053	559,992	346,632
EXPLORATION .....	FT.	1,973,190	2,182,129	2,377,012	2,191,246	2,357,587	2,350,396	2,396,032	2,815,025
TOTALS .....	FT.	8,444,578	10,093,579	7,472,525	9,115,293	8,809,544	10,149,097	9,942,272	9,106,679
WELL COMPLETIONS									
DEVELOPMENT									
OIL.....	NO.	1,077	1,306	797	899	818	930	724	645
GAS .....	NO.	60	64	55	141	144	153	188	175
DRY .....	NO.	82	98	88	104	128	117	138	207
SERVICE WELLS .....	NO.	13	6	13	93	27	62	39	12
OUTPOST									
OIL .....	NO.	23	11	21	25	16	14	17	8
GAS .....	NO.	8	15	18	23	20	31	43	15
DRY .....	NO.	18	14	28	30	19	57	39	25
EXPLORATION									
OIL.....	NO.	45	51	56	35	43	41	42	35
GAS .....	NO.	70	59	52	63	78	92	113	82
DRY .....	NO.	231	274	320	306	309	269	268	352
TOTALS .....	NO.	1,627	1,898	1,448	1,719	1,602	1,766	1,611	1,556
TOTAL OIL.....	NO.	1,145	1,368	874	959	877	985	783	688
TOTAL GAS .....	NO.	138	138	125	227	242	276	344	272
TOTAL DRY.....	NO.	331	386	436	440	456	443	445	584
SERVICE WELLS.....	NO.	13	6	13	93	27	62	39	12
PRODUCING OIL WELLS .....	NO.	6,135	7,390	8,016	8,536	9,216	9,878	10,529	10,809
PRODUCING GAS WELLS .....	NO.	489	523	585	705	832	950	1,088	1,257
CAPPED GAS WELLS .....	NO.	609	713	766	871	981	1,127	1,314	1,388
CRUDE OIL PRODUCTION .....	BBLs.	112,848,673	143,708,724	136,805,980	112,519,292	128,828,635	130,506,885	157,811,712	165,124,967
AVERAGE DAILY PRODUCTION .....	BBLs.	349,000	434,000	289,000	363,000	399,000	365,091	486,713	451,092
POSSIBLE DAILY PRODUCTION .....	BBLs.	630,000	746,000	793,000	797,000	838,000	896,774	966,974	964,947
MARKET DISTRIBUTION									
PRAIRIES .....	BBLs.	40,286,602	42,011,014	44,261,561	39,978,626	44,555,514	45,614,522	43,946,192	48,496,782
BRITISH COLUMBIA .....	BBLs.	19,327,798	21,894,038	22,300,264	20,680,988	22,585,326	23,282,402	23,867,278	19,431,279
OTHER CANADIAN AND EXPORTS .....	BBLs.	51,018,084	80,325,223	74,244,869	52,261,001	63,714,793	65,933,665	96,756,744	113,210,013
NATURAL GAS PRODUCTION .....	MCF.	168,808,357	200,191,107	244,219,878	294,448,877	352,733,681	443,408,780	569,689,295	843,816,821
CONSUMED IN ALBERTA *.....	MCF.	105,531,295	116,938,508	130,567,165	134,395,260	153,870,277	166,832,515	165,846,674	185,718,278
CONSUMED OUTSIDE ALBERTA .....	MCF.	12,058,901	11,755,193	22,503,907	71,913,408	123,490,047	185,871,125	278,297,782	457,250,000
INCLUDES FIELD USE, PIPELINE USE, AND PLANT USE. CLASSIFIED DURING THESE YEARS AS EXPLORATION OR DEVELOPMENT. INCLUDES NATURAL GASOLINE AND CONDENSATE.									



\* ALL ROYALTIES FROM P. & N. G. APPEAR AS OIL ROYALTIES UNTIL 1951





## OIL SANDS

Oil-impregnated sands outcrop along the valley of the Athabasca River near the town of McMurray in northeastern Alberta. It has been estimated that the deposits contain over 700 billion barrels of oil in place, of which 300 barrels of upgraded synthetic crude oil could be produced.

Access to the area is obtained through McMurray which is 250 miles from Edmonton.

The oil sands are part of the McMurray formation which are Lower Cretaceous in age, and directly overlie Devonian limestone. Although the origin of the oil in the formation has not been established, it has been suggested that the oil was derived mainly from the Upper Devonian and probably also Mississippian rocks. The bulk of it is possibly due to oil seepages that have been active from Lower Cretaceous times to the present, the principal migration having taken place during and immediately after the Laramide earth movements.

The oil is viscous and asphaltic, displaying considerable variation in properties. Its specific gravity at 25°C ranges from 1.005 to 1.025 and its viscosity at 50°F is 6,000 to 600,000 poise. The content of 100-penetration asphalt ranges from 65 to 80 per cent, whilst the higher hydro-carbons present correspond in volatility to heavy gasoline fractions. The amount of sulphur in the raw oil varies throughout the area; the average concentration is about five per cent by weight of the dry oil. It is distributed throughout the distillation range, although there are cyclo-paraffins present which are sulphur-free.

The crude oil is very susceptible to thermal decomposition. The products of simple refining are a high-sulphur gasoline, diesel oil, fuel oil, and asphalt.

Several methods of removing the oil from the sand at prices competitive with conventional crude oil recovery practices are being developed by private companies. After strip mining the oil-bearing sand, the oil may be recovered by distillation and centrifugal action. Alternatively the oil may be steamed and emulsified underground and retrieved through strategically placed wells. Experiments to determine the best methods are now being carried out entirely by private industry.

Production from the Athabasca Oil Sands may begin within the next ten years. The Government of Alberta, while offering every encouragement to private industry for the solution to the Athabasca Oil Sand enigma, is taking care to ensure that the production from the sands does not jeopardize the conventional oil industry and the multi-billion dollar investment it has in the province.

Comparisons of the amount of oil in the McMurray formation with the reserves of oil in normal oil fields are only realistic if placed on the same basis. This, however, cannot be done with any precision at present. Recovery of oil from the formation at depths where strip-mining is not practical depends on the development of new oilwell production techniques.

## CONSTRUCTION

The per capita value of construction in Alberta in 1951 was \$ 404, while the national per capita value was \$ 261. By 1962, the per capita value in Alberta had increased to \$ 594. The national per capita value was \$ 199 lower at \$ 395.

In 1948, the construction industry contributed \$ 120 million or 18 per cent of the total net value of production in Alberta. By 1960, the contribution of this industry had risen to \$ 446 million or 28 per cent. Annually since 1954, the construction industry has contributed more to Alberta's net value of production than any other segment of the provincial economy.

In 1951, approximately 26,000 persons were employed in the construction industry in Alberta. A decade later, employment had risen to an estimated 57,000.

The increases in construction activity have had marked effects on related trades and on commerce generally. The value of building materials used annually in Alberta has increased substantially since 1951. In that year approximately \$ 200 million was spent on building materials. By 1963, expenditures had increased to \$381 million.

New techniques, such as enclosing building projects in plywood sheaths or in polythene "bags", the use of portable heaters, and better scheduling of phases of construction are making the industry less vulnerable to seasonal fluctuations, thus ensuring steadier year-round employment.

Building permits, although not issued by all municipal corporations, are a useful source of information as to the trends in construction activity in each area. In 1948, the recorded value of building permits issued in Alberta was \$ 54 million. The recorded value had reached \$ 287 million by 1962. During the period 1948-1962, each of the ten cities showed substantial growth in the value of building permits issued.



*Vegetable oils have become an important product of southern Alberta.*



During the period 1948-1962, the number of dwelling unit completions in the province increased 117 per cent, while the number of families increased by 53 per cent. In 1948, 60 per cent of the dwelling unit completions in Alberta took place in urban centres. The remaining 40 per cent were constructed at scattered **points** throughout the province. In 1962, 80 per cent of the completions took place in urban centres, while only 20 per cent were completed in other Alberta centres.

Table 38. CONSTRUCTION OF DWELLING UNITS\* - ALBERTA AND CITIES OF  
5,000 POPULATION OR MORE,  
1948 - 1962

JANUARY 1 TO DECEMBER 31

COMPLETED

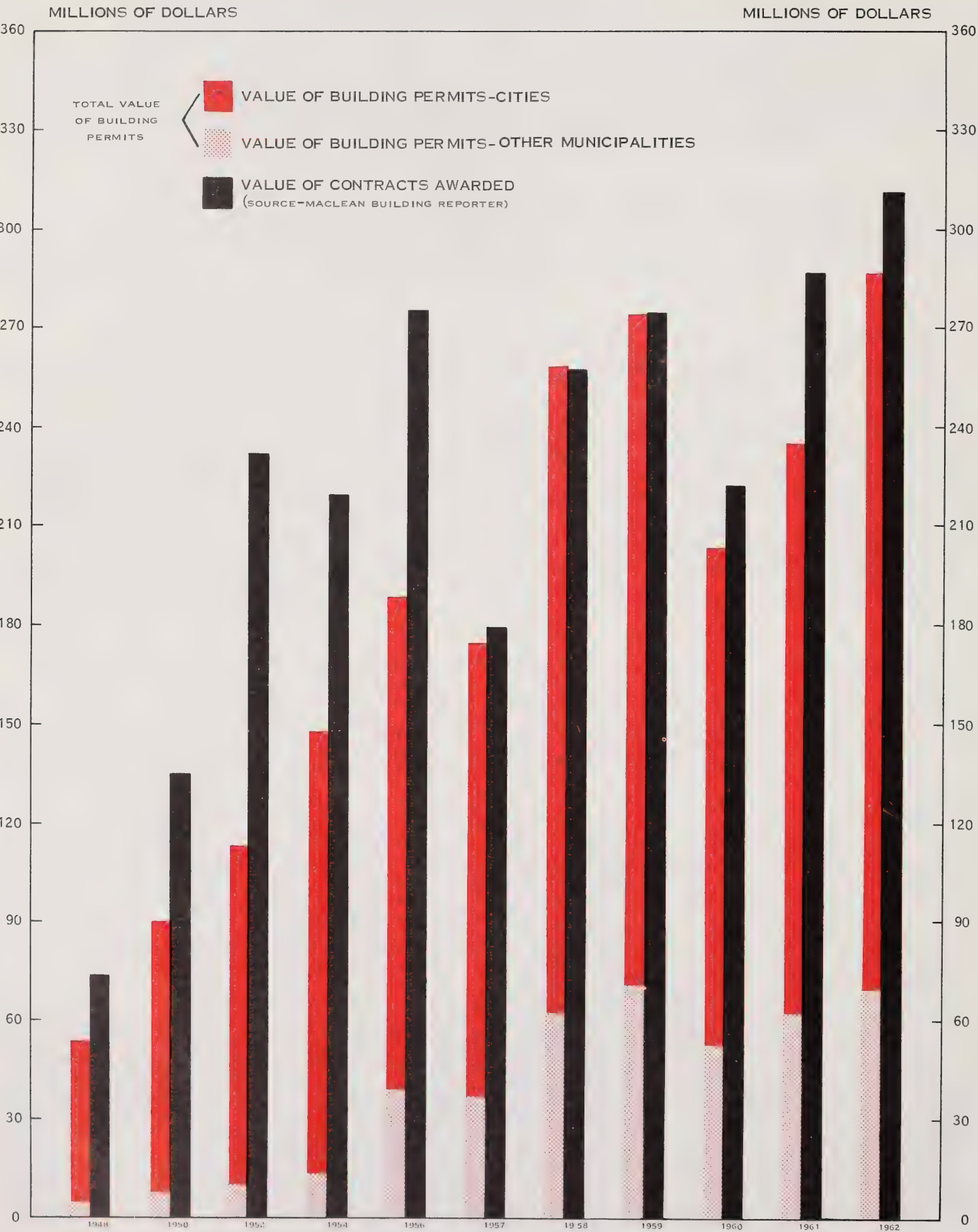
	Alberta	Calgary**	Edmonton**	Lethbridge	Medicine Hat	Red Deer	Camrose	Lloydminster(pt.)	Grande Prairie
1948	6,223	1,375	1,784	226	258	***	***	***	***
1949	9,411	1,986	2,361	356	199	***	***	***	***
1950	7,266	1,976	2,776	453	117	***	***	***	***
1951	6,057	1,882	2,464	260	90	***	***	***	***
1952	6,204	2,092	2,864	269	137	92	***	***	***
1953	9,854	3,316	3,701	320	155	198	***	***	***
1954	10,285	3,167	3,873	384	214	181	***	***	***
1955	10,610	3,223	4,076	445	193	276	***	***	***
1956	11,622	3,880	3,350	349	200	180	***	***	***
1957	9,948	2,919	2,957	213	245	107	32	***	42
1958	13,562	4,923	4,702	354	284	214	25	16	171
1959	14,183	5,392	4,995	544	333	312	59	50	59
1960	11,477	4,508	3,328	418	285	227	85	27	72
1961	10,545	3,806	3,212	291	275	328	67	34	94
1962	13,493	4,613	4,800	306	245	444	72	31	197

\* A Dwelling Unit is defined as a structurally separate set of living quarters having its own entrance from outside of the building or from a common passage inside.

\*\* Metropolitan Area.

\*\*\* Figures not available.

The total value of construction work performed in Alberta has more than doubled in the period from 1951-1963. Expenditures in 1963 amounted to approximately \$834 million as compared to \$380 million in 1951. In that year the total value of building construction amounted to approximately \$204 million. By 1963, the value had risen to \$443 million. The total value of engineering construction in the province reached a record \$486 million in 1961. Reductions in expenditures for gas and oil facilities and road, highway and aerodrome construction resulted in a decline in construction activity in 1962. The value of engineering construction work performed in 1963 amounted to \$390 million.



VALUE OF BUILDING PERMITS ISSUED BY CITIES AND OTHER MUNICIPALITIES, AND VALUE OF CONSTRUCTION CONTRACTS AWARDED, ALBERTA, SPECIFIED YEARS, 1948-1962



Table 39. VALUE OF BUILDING PERMITS ISSUED BY CENSUS DIVISIONS AND BY CITIES -- ALBERTA, 1948-1962

	1948 \$	1949 \$	1950 \$	1951 \$	1952 \$	1953 \$	1954 \$	1955 \$
Division No. 1 .....	1,006,536	1,004,254	1,355,530	1,633,030	2,430,875	4,555,195	2,788,624	22,527,710
Medicine Hat .....	942,311	971,274	1,259,380	1,569,625	2,373,080	3,960,220	2,418,349	22,266,810
Division No. 2 .....	4,590,514	5,270,825	5,067,625	5,427,375	5,476,855	9,170,503	10,281,717	7,384,129
Lethbridge .....	4,464,234	4,665,660	4,479,525	4,820,675	4,741,855	7,429,441	9,028,681	6,356,271
Division No. 3 .....	583,325	271,014	759,700	690,460	700,496	894,185	520,515	641,280
Division No. 4 .....	66,000	76,500	35,475	47,125	86,175	317,400	222,540	412,750
Division No. 5 .....	440,695	332,490	529,215	626,290	527,356	897,810	511,123	665,648
Drumheller .....	301,555	134,390	345,540	134,085	287,740	133,045	311,773	238,448
Division No. 6 .....	14,620,347	22,411,578	26,405,315	23,203,260	53,590,767	43,745,089	47,418,246	61,157,761
Calgary .....	14,002,705	21,978,773	25,980,739	22,536,790	53,093,722	42,696,454	47,047,263	59,349,398
Division No. 7 .....	724,810	558,667	595,873	864,900	1,077,575	2,041,900	1,306,170	764,801
Division No. 8 .....	2,038,455	2,890,010	2,601,795	1,956,570	3,036,765	5,658,345	5,321,350	5,461,890
Red Deer .....	1,212,590	1,558,300	1,763,075	1,002,590	2,275,801	3,885,250	3,780,350	4,166,763
Division No. 9 .....	54,015	52,485	44,760	39,619	128,760	43,035	18,950	5,850
Division No. 10 .....	918,673	843,495	2,052,773	2,263,160	3,066,395	4,250,526	3,434,071	3,378,151
Camrose .....	418,526	339,980	511,680	936,530	1,152,168	2,012,448	1,550,980	1,542,245
Lloydminster .....	-	-	642,963	498,240	900,513	851,303	807,181	373,404
Division No. 11 .....	27,777,464	40,858,993	48,123,672	38,323,339	40,236,676	60,662,440	72,112,132	68,859,200
Edmonton .....	27,123,329	40,212,063	46,848,872	36,672,784	37,504,676	56,189,767	69,032,156	60,037,486
Wetaskiwin .....	219,800	358,380	270,875	153,947	565,000	1,279,840	621,030	369,725
Division No. 12 .....	317,200	531,850	456,500	280,850	383,825	1,132,760	1,251,300	710,305
Division No. 13 .....	51,840	101,910	548,750	494,400	295,825	483,613	815,200	446,700
Division No. 14 .....	44,680	154,400	329,750	102,000	366,375	404,850	604,160	1,045,261
Division No. 15 .....	302,260	1,186,889	707,923	1,414,522	1,873,684	1,332,762	1,223,658	2,992,851
Grande Prairie .....	237,160	680,239	262,273	580,680	786,789	526,687	522,152	1,745,097
TOTAL ALBERTA .....	53,536,814	76,545,360	89,614,656	77,366,900	113,278,404	135,590,413	147,829,756	176,454,287
TOTAL 10 CITIES .....	48,922,210	70,899,059	82,364,922	68,905,946	103,681,344	118,964,455	135,119,915	156,445,647

	1956 \$	1957 \$	1958 \$	1959 \$	1960 \$	1961 \$	1962 \$
Division No. 1 .....	4,764,860	4,001,340	6,218,207	8,382,320	5,533,739	7,873,186	6,274,244
Medicine Hat .....	4,472,560	3,691,170	5,611,825	7,560,970	4,960,859	7,314,250	5,899,944
Division No. 2 .....	8,101,379	6,112,183	10,068,936	12,697,766	9,631,576	8,581,511	12,834,169
Lethbridge .....	6,999,719	4,931,459	7,784,009	9,080,917	7,088,299	6,642,054	9,539,712
Division No. 3 .....	1,068,220	1,964,590	1,371,164	1,616,755	1,589,256	2,352,502	2,349,431
Division No. 4 .....	652,825	579,300	522,663	503,500	380,100	436,825	350,785
Division No. 5 .....	605,768	522,710	1,248,105	1,937,023	1,790,375	1,266,111	2,977,470
Drumheller .....	174,970	183,945	212,675	969,455	871,620	364,589	1,915,030
Division No. 6 .....	65,509,865	61,216,533	112,702,272	115,403,218	78,541,757	81,690,463	93,275,180
Calgary .....	62,424,070	58,112,049	108,293,611	106,061,606	72,202,376	73,515,870	87,961,206
Division No. 7 .....	2,038,180	1,655,433	2,045,873	2,877,099	1,400,350	2,037,330	4,592,162
Division No. 8 .....	5,408,204	5,313,589	7,889,858	12,546,102	10,032,594	11,041,201	15,745,685
Red Deer .....	3,523,590	3,231,731	4,721,733	8,304,441	5,973,278	6,933,445	10,327,483
Division No. 9 .....	12,850	40,897	82,550	20,085	99,750	386,550	361,362
Division No. 10 .....	3,179,756	4,514,792	4,136,675	6,252,616	5,501,589	5,580,566	8,750,604
Camrose .....	941,670	1,277,298	1,247,250	2,081,410	2,179,700	1,452,500	4,111,435
Lloydminster .....	342,390	876,639	871,080	1,583,251	1,088,165	1,548,574	1,131,766
Division No. 11 .....	84,797,783	80,023,038	103,317,390	101,591,122	79,541,654	101,775,653	123,709,302
Edmonton .....	71,453,602	67,042,858	76,139,994	73,080,604	56,978,108	70,374,675	90,345,489
Wetaskiwin .....	638,091	754,825	548,550	1,205,087	1,369,400	1,933,100	1,683,636
Division No. 12 .....	1,043,714	1,566,579	2,191,005	1,549,308	1,621,374	3,389,417	2,848,977
Division No. 13 .....	605,810	551,859	964,210	1,458,270	1,446,639	1,275,980	2,277,679
Division No. 14 .....	6,461,190	2,557,029	2,668,745	1,981,553	1,080,005	1,959,665	2,080,898
Division No. 15 .....	3,965,779	3,524,530	3,019,292	5,173,271	5,231,766	5,232,245	8,666,080
Grande Prairie .....	2,101,609	2,455,040	1,495,749	2,089,095	2,532,753	2,723,718	4,382,215
TOTAL ALBERTA .....	188,216,183	174,144,402	258,446,945	273,990,008	203,422,524	234,879,205	287,094,028
TOTAL 10 CITIES .....	153,072,271	142,557,014	206,926,476	212,016,836	155,244,558	172,802,775	217,297,916

## SULPHUR

Sulphur is used in the manufacture of pulp and paper, and of heavy chemicals including sulphuric acid. It is also used in rubber goods, explosives, and in petroleum and sugar refining.

There are no known deposits of elemental sulphur in Canada. Elemental sulphur is produced from "sour" natural gas in Alberta by the removal of hydrogen sulphide before the gas is marketed. Considering only fields with gas reserves greater than 10 billion cubic feet and containing not less than 2 per cent hydrogen sulphide the sulphur reserves of Alberta\* total at least 20 million tons.

Approximate sulphur reserves of gas fields having reserves of more than 10 billion cubic feet of gas and over 2 per cent  $H_2S$ :

Name of field	Producing horizon	No. of analyses available	$H_2S$	Recoverable gas reserves	Approx. recoverable sulphur reserves
			%	B.C.F.	'000 tons
Calgary	Wabamun	2	34.7	45	640
Crossfield	Elkton	none	?	85	?
Fairydell-Bon Accord	Nisku	2	3.8	70	100
Fenn-Big Valley	Nisku	18	2.6	70	65
Homeglen-Rimbey	Leduc-gas cap			800	1130 <sup>+</sup>
Homeglen-Rimbey	Leduc solution	9	4.0 <sup>+</sup>	50	70 <sup>+</sup>
Jumping Pound	Rundle	24	3.6	538	700 <sup>-</sup>
Kathryn	Wabamun	1	12.0	30	115
Leduc-Woodbend	Nisku-gas cap		very	32.5	?
Leduc-Woodbend	Nisku solution		variable	58	?
Little Smoky River	Leduc	1	12.0	10	40
Nevis	Nisku and Leduc	6	6.8	480	1200
Okotoks	Wabamun	9	33.2	135	2100
Olds	Wabamun	4	7.2	70	190
Pincher Creek	Rundle	8	10.2	1800	7150
Redwater	Leduc	34	2.7	62.5	60
Samson Lake	Basal Quartz	1	7.5	70	180
Savanna Creek	Rundle	11	12.0 <sup>+</sup>	250	1100 <sup>+</sup>
Stettler	Nisku	4	3.6	11	14
Stettler	Leduc	4	3.2	4	5
Sturgeon Lake	Leduc	3	9.0	18	55
Sturgeon Lake South	Leduc	5	9.7	105	380
Sundre	Elkton-gas cap			15	25
Sundre	Elkton solution	4	4.5	30	50
Turner Valley	Rundle-gas cap			205	100
Turner Valley	Rundle solution	10	1.4	150	75
West Drumheller	Nisku-gas cap			7	5
West Drumheller	Nisku solution	11	2.0	11	8
Wimborne	Leduc	2	35.0	65	825
Windfall	Leduc	2	16.0	600	4000

Approximate recoverable sulphur reserves: over 20,000 tons

\* An additional potential source is provided by the oil of McMurray oil sands which contains about 5 per cent sulphur



Despite these considerable reserves the production of sulphur is limited, for it is determined by the markets for gas and by the markets for sulphur itself. In 1957 the output in Alberta had risen to slightly more than 100,000 tons, chiefly derived from Jumping Pound, Pincher Creek and Turner Valley gas fields.

## HELIUM

Helium is used as a lifting gas in airships, for helium-shielded arc welding, in production of titanium and zirconium, as a fuel expellent in rockets and guided missiles, and in medicine. Analyses of natural gas in Alberta show the helium content to be generally less than 0.5 per cent.

It is observed that helium occurs in concentrations of about 0.25 per cent in gas from the southeast corner of the province. A single analysis of a well producing from "granite wash" in northern Alberta showed 0.51 per cent helium.

Helium analyses showing more than 0.1 per cent He in Alberta natural gases:

Field	Zone	He (%)	Field	Zone	He (%)
Bindloss Valley	Bow Island	0.12	Pend. d'O	2nd Bow Island	0.25
Comrey	Bow Island	0.13	Pend. d'O	1st Bow Island	0.28
Manyberries	Bow Island	0.18	Smith Coulee	Bow Island	0.26
Manyberries	-2nd sand Bow Island	0.21	Wildmere	Colony	0.11
Medicine Hat	-"K" sand Medicine Hat	0.11	Wildmere	Stray Lower	0.10
			Wildcat	B1. sand granite wash	0.51

## MAGNESIUM, BROMINE AND IODINE

The formation waters of some oilfields in Alberta carry high concentrations of soluble materials. For example waters from the Wizard Lake field contain approximately 17,000 milligrams per litre of magnesium, 1400 of bromine, 18 of iodine, 20,000 of calcium, 46,000 of sodium, 195,000 of chloride, and less than 200 each of bicarbonate and sulphate. The analyses together with information on quantity and availability of water produced, are presently being studied by the Research Council with the intention of reviewing the possibilities of commercial extraction of certain elements.

### Magnesium:

Magnesium metal or one of its compounds is used in high-strength and light-weight structural alloys, in the production of titanium, as a cathodic protecting agent for iron and steel equipment (e.g. pipelines) in corroding environments, refractories in the steel and copper industries, and also in the cement, fertilizer, textile and chemical industries.

The magnesium concentration in some formation waters in wells of the Wizard Lake field reaches 17,000 milligrams per litre (5.95 pounds per barrel) or over 12 times that of sea-water. The amount theoretically recoverable depends not only upon the concentration but, of course, upon the

## AGRICULTURE

According to the 1961 census there are 47 million acres of occupied farm land in Alberta. About 25.3 million acres are improved and utilized as follows: under crops, 15.6 million acres; pasture, 1.7 million; summerfallow, 7.4 million; and other, 0.5 million acres.

It is estimated that 68 million acres of land in Alberta could be utilized for agricultural purposes. A total of 30 million acres are classed as good to fair arable land and 10 million as fair to poor arable. The remainder may be improved and utilized as permanent pasture or hay meadow.

The further development of Alberta's agricultural resources will depend largely on the expansion of markets and on changes in the technique of farming. Growth could advance on two fronts; first, the area in occupied farms may increase; second, a more likely occurrence, the land presently exploited may be more intensively farmed.

In the process of development in Alberta, it is not likely that the general pattern of agriculture already established will change greatly. Farming systems and practices now in effect are reasonably well adapted to soil and climatic conditions. The south is devoted largely to cattle ranching and wheat growing on a specialty basis. However, the introduction of irrigation has made possible the development of sugar beets, vegetables (for processing and the fresh trade), live stock feeding operations and so forth. In central areas, mixed farming predominates with live stock receipts providing the greater part of farm cash income. In parts of the Edmonton and Calgary milksheds over 40 per cent of the total farm live stock revenue accrues from the sale of dairy products. In the Peace River country the production of crops for cash sale is important. In addition live stock production is increasing. In 1950, farmers in the southwest portion of the area obtained 45.3 per cent of total farm income from cattle; 14.0 per cent from hogs; and 10.0 per cent from dairying. Live stock feeding operations, resulting in the production of high quality meats, have expanded rapidly in all parts of the province since the war.

Agriculture is directly related to industry in Alberta. Plants which process farm products (meat packing, flour milling, dairy products, vegetables, and sugar beets) are all successfully established.

Possibilities for the further development of secondary industry based on agriculture, are many. Much depends upon future changes in the size of the market, population increases, and food preferences. Higher incomes increase the demand for meats, vegetables and fruits, but reduce the consumption of cereal products. A larger market in Western Canada will permit expansion in the production, processing and marketing of specialty crops grown in Alberta. The enlargement of the market for such articles as canned vegetables, may eventually increase the competitive advantage of Alberta producers so as to exclude the importation of this product.

Improvement in refrigerated transportation has increased the proportion of the live stock processed in Alberta. This trend will continue. Significant increases in Canada's meat requirements are forecast and Alberta's undeveloped potential to produce live stock is substantial. Consequently, the expansion of meat packing operations in the province can be predicted with confidence.



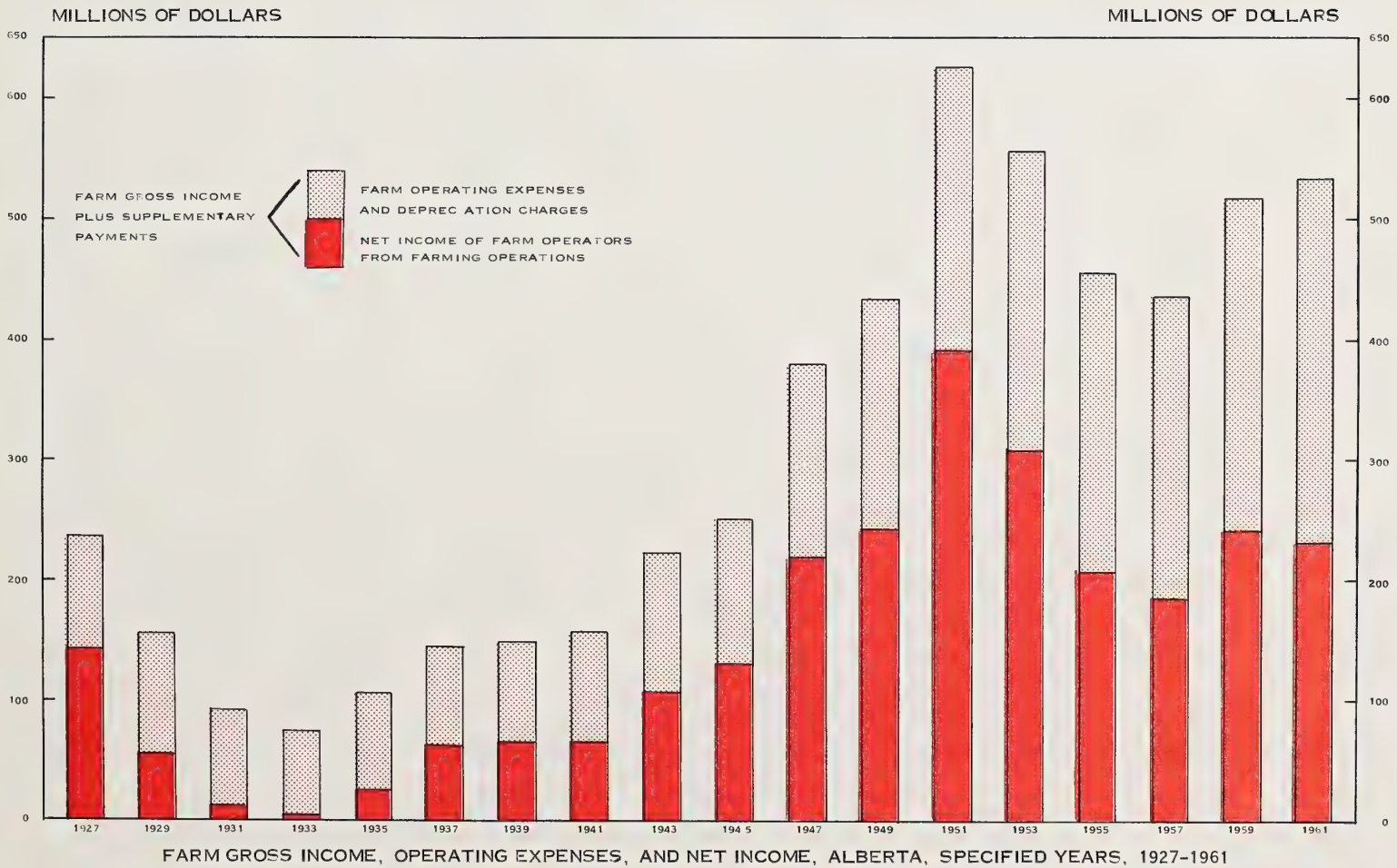
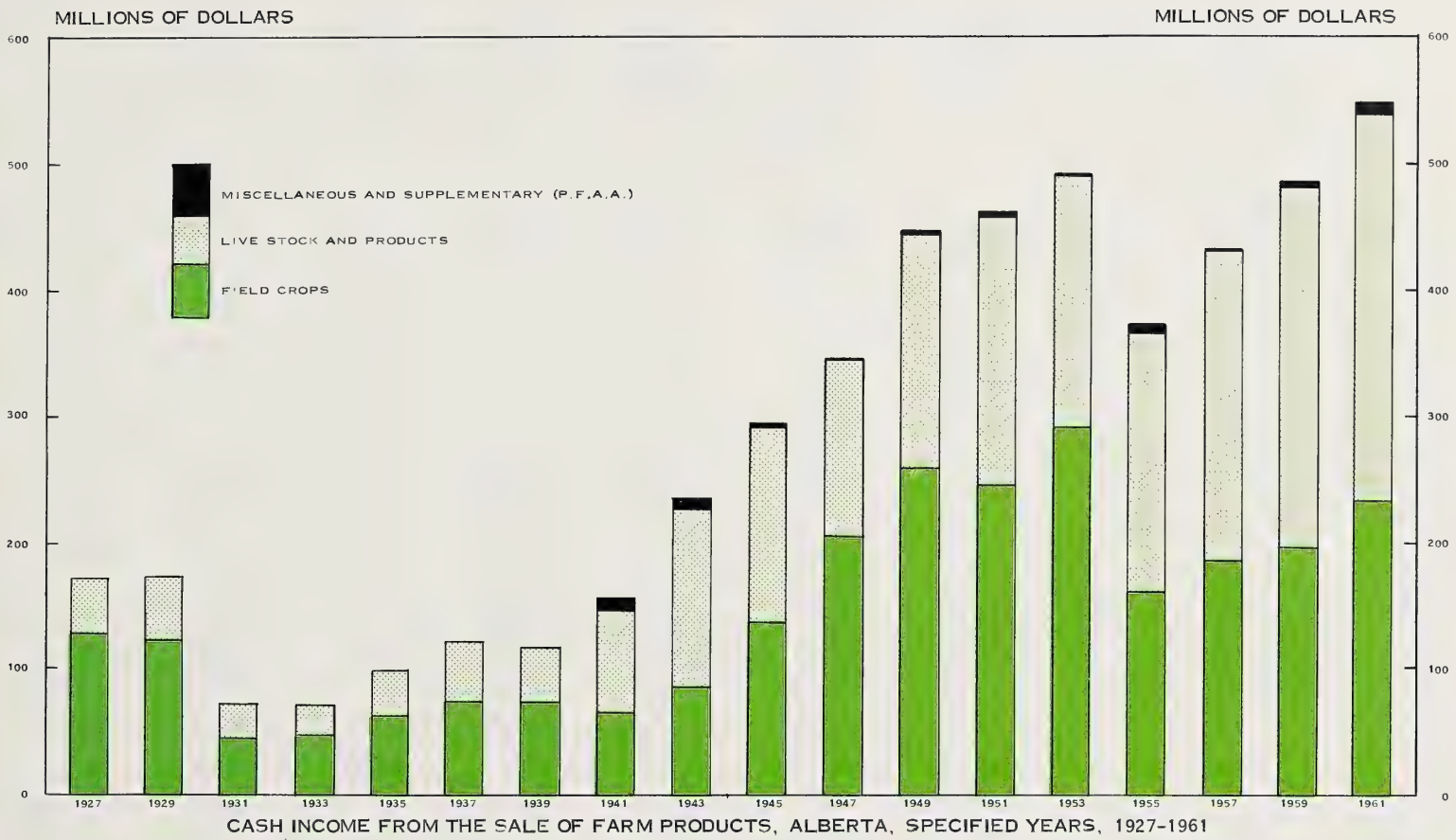


TABLE 42. INCOME OF FARM OPERATORS FROM FARMING OPERATIONS - ALBERTA

YEAR	1946 - 1961							
	1	2	3	4	5	6	7	8
	CASH INCOME FROM FARM PRODUCTS	INCOME IN KIND	SUPPLE- MENTARY PAYMENTS	REALIZED GROSS INCOME	OPERATING AND DEPRECIATION CHARGES	REALIZED NET INCOME	VALUE OF INVENTORY CHANGE	TOTAL GROSS INCOME
				(1 + 2 + 3)		(4 - 5)		(4 + 7)
- THOUSAND DOLLARS -								
1946	283,270	31,049	4,458	318,777	137,862	180,915	15,792	334,569
1947	346,205	34,564	1,732	382,501	159,984	222,517	- 2,401	380,100
1948	440,531	39,470	3,533	483,534	180,773	302,761	- 6,674	476,860
1949	444,382	38,785	3,360	486,527	188,695	297,832	-52,113	434,414
1950	356,471	38,017	5,256	399,744	210,091	189,653	14,302	414,046
1951	459,226	42,245	4,235	505,706	233,454	272,252	119,692	625,398
1952	508,646	41,413	2,349	552,408	245,534	306,874	74,946	627,354
1953	490,857	42,363	559	533,779	247,953	285,826	24,117	557,896
1954	390,322	39,039	1,031	430,392	240,938	189,454	11,260	441,652
1955	369,411	39,203	5,776	414,390	249,099	165,291	43,908	458,298
1956	436,653	41,526	1,319	479,498	257,952	221,546	53,022	532,520
1957	436,346	40,733	905	477,984	250,721	227,263	-41,623	436,361
1958	484,381	43,543	19,394	547,318	264,936	282,382	-18,296	529,022
1959	481,141	42,568	7,128	530,837	276,762	254,075	-11,294	519,543
1960	474,700	43,977	25,010	543,687	284,730	258,957	-25,192	518,495
1961	527,836	43,582	8,233	579,651	300,115	279,536	-45,938	533,713

TABLE 43. FARM INCOME IN KIND - ALBERTA

YEAR	1946 - 1961							
	DAIRY PRODUCTS	POULTRY AND EGGS	MEAT	FRUITS AND VEGETABLES	HONEY	FOREST PRODUCTS	OTHER PRODUCTS	HOUSE RENT
- THOUSAND DOLLARS -								
1946	4,533	5,506	3,728	6,304	44	1,888	20	9,026
1947	5,725	5,303	4,549	6,720	50	1,840	27	10,350
1948	7,199	5,312	5,177	7,357	157	1,770	32	12,466
1949	6,198	5,578	4,691	7,621	61	1,655	25	12,956
1950	5,453	5,120	5,293	7,031	67	1,566	8	13,479
1951	5,996	7,466	5,634	7,430	29	1,674	5	14,011
1952	5,342	7,257	4,638	8,910	28	1,225	2	14,011
1953	5,097	7,223	4,833	7,874	26	1,013	16	16,281
1954	5,233	6,485	5,395	7,594	19	800	14	13,499
1955	5,387	6,540	5,060	7,661	25	690	17	13,823
1956	5,447	5,218	5,159	7,719	24	1,666	12	16,281
1957	5,274	4,748	4,949	7,823	27	1,623	8	16,281
1958	5,496	5,138	5,594	8,281	18	1,598	2	17,416
1959	5,169	4,547	5,428	8,043	18	1,564	5	17,794
1960	5,162	5,095	5,126	8,103	27	1,530	5	18,929
1961	4,953	4,786	5,077	7,979	21	1,456	3	19,307



TABLE 44. FARM OPERATING EXPENSES AND DEPRECIATION CHARGES - ALBERTA  
1946 - 1961

YEAR	TAXES	GROSS RENT	HIRED LABOUR	INTEREST ON INDEBT- EDNESS	FEED AND SEED	TRACTOR	TRUCK	AUTOMOBILE	ENGINE AND COMBINE
- THOUSAND DOLLARS -									
1946	9,602	20,869	18,037	5,788	11,647	15,477	4,586	3,399	1,682
1947	10,769	23,600	20,327	5,768	17,122	16,325	5,639	3,866	1,887
1948	12,560	23,800	20,419	5,817	20,206	20,242	6,920	4,550	2,359
1949	14,198	18,664	20,422	6,025	19,544	22,960	8,442	4,839	2,559
1950	14,822	20,756	22,975	6,281	17,752	27,184	11,627	6,440	2,902
1951	15,118	24,852	25,406	6,697	15,099	28,935	16,041	8,282	3,128
1952	16,630	25,719	29,983	6,893	12,499	30,747	16,697	8,187	3,297
1953	18,193	20,779	28,913	7,152	10,228	32,944	18,258	8,147	3,421
1954	19,012	14,383	22,869	7,240	14,223	34,697	19,138	8,248	3,396
1955	18,099	18,967	24,170	7,342	15,036	35,359	20,457	8,264	3,596
1956	19,149	19,500	25,390	7,470	14,038	38,197	20,609	8,615	3,959
1957	19,245	15,301	22,544	7,606	13,693	38,072	20,880	8,717	3,886
1958	19,591	17,062	24,965	8,062	16,387	39,088	23,481	8,799	3,933
1959	20,473	17,728	25,107	8,729	17,269	39,747	24,704	8,888	4,043
1960	22,213	16,608	28,189	9,876	15,420	40,237	25,900	9,082	4,027
1961	22,546	16,329	28,723	10,826	21,000	42,859	27,195	9,488	3,940

YEAR	MACHINERY REPAIRS	FERTILIZER AND AGRICULTURE LIME	FRUIT AND VEGETABLE SUPPLIES	BUILDING REPAIRS	ELECTRIC POWER	MISCELLAN- EOUS	DEPRECIA- TION BUILDINGS AND MACHINERY	TOTAL OPERATING AND DEPRECIA- TION
- THOUSAND DOLLARS -								
1946	9,625	686	2,001	2,962	85	8,151	23,265	137,862
1947	10,952	969	2,506	3,207	126	9,928	26,993	159,984
1948	12,856	1,294	2,558	4,010	180	10,449	32,553	180,773
1949	12,805	1,993	2,529	4,167	238	10,860	38,450	188,695
1950	13,580	2,409	2,469	4,416	328	11,043	45,107	210,091
1951	12,969	3,271	2,964	6,521	448	12,299	51,424	233,454
1952	13,962	2,991	3,071	8,253	548	12,855	53,202	245,534
1953	14,094	3,612	2,958	8,708	749	12,906	56,891	247,953
1954	11,689	3,000	2,870	8,792	906	12,301	58,174	240,938
1955	12,173	2,755	3,318	8,478	1,095	13,150	56,840	249,099
1956	13,251	3,136	3,270	9,400	1,334	14,873	55,761	257,952
1957	13,733	3,549	3,236	8,643	1,441	15,143	55,032	250,721
1958	14,205	4,565	2,967	9,406	1,677	15,813	54,928	264,936
1959	15,763	6,112	3,262	10,183	2,076	17,289	55,389	276,762
1960	15,510	6,942	3,392	9,877	2,134	17,693	57,630	284,730
1961	15,596	8,487	3,748	10,033	2,201	18,303	58,841	300,115

Flour milling will increase more slowly in relation to the growth of regional population. A growing home market may permit the expansion of facilities for the production of breakfast cereals, biscuits, cake mixes.

Establishments processing dairy and poultry products, honey, and so forth, will increase in size rather than in number for some years to come. The number of centres requiring pasteurized milk will increase but will be served by existing plants in the larger centres. Foreign varieties of cheese are being manufactured and markets for the product are developing in larger big Canadian cities. Butter-making is likely to remain at present levels unless coloured substitutes are permitted.

The successful incubation of chicks and poults artificially and the practical application of chick-sexing, completed the transfer of the hatching function from the farm to a service industry. The economies of large scale operations and labor specialization in poultry dressing plants associated with consumer preference for oven-ready or cooked poultry meat, has led to the growth of secondary industry based on poultry raising.

It might also be mentioned that feed manufacturers, a group hardly existent before the war, now provide important services to the live stock and poultry industry. Having regard for the rapid growth of specialization in these industries, it is inevitable that the demand for specialty feeds will increase.

New crops and related industrial opportunities are most likely to be introduced in the south where higher summer temperatures, longer growing seasons, and irrigation make possible the production of many crops that cannot be grown successfully in central and northern areas.

Commercial mustard, white spring wheat, safflower and sunflower seeds are grown under contract in Alberta. The wheat is milled into cake and pastry flours in the province. Facilities for processing the other crops mentioned above, are now available. The same facilities extract oil from rape seed which is currently being produced in most parts of the province. Success in this venture would constitute a major triumph for modern agriculture in Alberta.

Ample soils of suitable texture are available in irrigated areas for the production of vegetable crops. Sugar beet production is a great success. An increasing variety and volume of other vegetables are produced for immediate consumption and for canning, but well established "outside" supplies provide strong competition. Nevertheless, Alberta should soon achieve sufficient volume to effect the necessary economies in the production, processing and marketing of these crops. The development of a suitable canning tomato adapted to the area would contribute more than any other single factor toward increasing the volume of canning vegetables.

Problems associated with cooling and processing vegetables for the fresh trade are currently receiving attention and the results are being put to use. In recent years improved storage has extended the marketing season. There is an active interest in the development of plastic plant covers that may extend the normal growing season for tender vegetables into October. In the case of some vegetables the use of covers in the spring may increase production and decrease the cost of production per unit.



Horticultural practice under glass is most extensively developed at Medicine Hat. Flowers, cucumbers and tomatoes are the main crops. The control of nematodes is still a problem but financial returns appear to be satisfactory. However, production is not increasing at Medicine Hat or expanding to other points. Tomatoes were at one time quite widely grown under glass in the province. The possibilities for expansion in greenhouse facilities for growing transplants for field have not been exploited.

Table 45. CASH INCOME FROM THE SALE OF FARM PRODUCTS\* - ALBERTA  
1945-1962

Year	Wheat	Oats	Barley	Rye	Flaxseed	Potatoes	Vegetables	Other Crops	Forest Products	Supplementary +
- Thousand Dollars -										
1945	92,472	21,647	8,007	1,758	1,437	887	1,000	11,001	287	3,242
1946	108,714	12,801	9,091	4,190	1,461	1,248	1,149	10,118	337	4,458
1947	128,609	20,794	22,606	11,419	7,407	1,414	1,148	11,835	384	1,732
1948	167,259	17,534	22,490	8,552	9,932	1,496	1,440	19,661	460	3,533
1949	203,416	13,697	17,522	4,653	2,648	1,574	1,233	14,023	447	3,360
1950	113,181	11,601	18,967	3,077	793	1,529	1,002	16,179	491	5,256
1951	179,175	12,885	27,839	4,478	2,143	1,479	1,238	14,904	712	4,235
1952	204,040	30,262	56,648	7,288	5,337	2,234	2,075	17,028	769	2,349
1953	187,564	20,589	52,932	3,780	4,260	1,824	2,439	16,198	630	559
1954	107,164	14,966	29,442	3,801	3,839	1,405	2,097	15,396	529	1,031
1955	99,975	7,534	26,747	1,901	6,341	1,529	2,482	13,338	733	5,776
1956	134,531	11,418	34,543	3,857	10,215	1,983	2,751	15,948	702	1,319
1957	116,132	8,964	28,305	1,086	14,048	1,679	1,265	15,650	602	905
1958	113,120	5,797	33,515	1,705	9,830	1,807	932	18,648	473	19,394
1959	121,960	4,150	36,348	1,326	16,706	1,673	964	15,022	429	7,128
1960	119,758	6,033	30,256	889	12,522	2,242	1,008	17,964	450	25,010
1961	142,784	12,177	32,303	1,545	13,961	2,361	1,143	23,996	485	8,233
1962	150,648	11,359	38,609	1,603	10,863	2,770	1,155	17,932	525	21,387

Year	Cattle and Calves	Hogs	Sheep and Lambs	Dairy Products	Poultry	Eggs	Other Livestock and Products	Total Crops	Total Livestock and Products	Total Cash Income
- Thousand Dollars -										
1945	49,136	64,124	2,765	18,615	5,869	6,845	4,716	141,738	152,070	293,808
1946	48,613	47,710	2,686	19,029	4,988	6,922	4,213	153,567	134,161	287,728
1947	45,974	50,158	3,072	22,317	5,190	7,932	5,946	207,348	140,589	347,937
1948	79,612	59,828	2,766	27,852	6,113	9,076	6,460	252,357	191,707	444,064
1949	84,403	52,175	3,064	25,371	6,865	8,063	5,228	262,573	185,169	447,742
1950	93,862	49,803	3,203	24,357	6,679	6,228	5,519	172,076	189,651	361,727
1951	95,105	64,341	1,965	26,955	10,839	9,166	6,002	249,088	214,373	463,461
1952	70,500	60,051	2,190	26,582	9,051	8,782	5,809	328,030	182,965	510,995
1953	72,701	70,743	1,655	28,612	9,980	11,369	5,581	290,775	200,641	491,416
1954	77,571	75,342	1,666	28,936	11,470	11,455	5,243	179,670	211,683	391,353
1955	80,278	67,208	2,391	30,173	9,871	13,178	5,732	166,356	208,831	375,187
1956	87,776	67,258	2,162	31,253	13,525	13,066	5,665	217,267	220,705	437,972
1957	110,704	65,442	2,548	33,912	13,268	12,681	5,685	188,636	244,240	432,876
1958	149,720	77,794	2,729	37,073	12,478	12,001	6,424	205,221	298,219	503,440
1959	132,529	78,173	2,908	37,578	12,775	10,943	6,865	205,706	281,771	487,477
1960	143,808	61,563	3,516	39,596	12,991	11,443	5,468	216,132	278,385	494,517
1961	158,866	70,986	3,879	41,617	15,076	11,447	6,576	238,988	308,447	547,435
1962	174,074	72,727	3,182	41,090	13,287	10,994	5,876	256,851	321,230	578,081

\* Interim and final Canadian Wheat Board payments for wheat, oats and barley are credited to the year in which they are received by farmers.

+ Payments made under the provisions of the Prairie Farm Assistance Act, the Prairie Farm Income plan and the Wheat Acreage Reduction programme.

Table 46. FARM MACHINERY AND ELECTRIC POWER - BY CENSUS DIVISIONS - ALBERTA, 1961

	Alberta	Census Division 1	Census Division 2	Census Division 3	Census Division 4	Census Division 5	Census Division 6	Census Division 7
	No.	No.	No.	No.	No.	No.	No.	No.
FARM MACHINERY								
Automobiles .....	52,167	1,836	4,115	2,253	1,576	3,940	4,085	4,150
Motor Trucks .....	71,508	3,163	7,444	3,331	2,536	6,280	5,607	4,956
Tractors .....	102,624	3,530	9,164	4,206	3,281	7,056	7,291	7,501
Grain Combines .....	38,530	1,694	3,403	1,573	1,543	3,841	2,614	3,254
Pick-up Hay Balers .....	15,632	729	1,291	1,013	765	1,316	1,511	1,330
ELECTRIC POWER								
Farms Reporting .....	52,936	1,622	4,216	2,264	1,490	3,658	4,318	4,011
Power Lines .....	51,161	1,517	4,168	2,196	1,364	3,547	4,231	3,858
Other .....	1,847	109	56	75	127	123	96	161

	Census Division 8	Census Division 9	Census Division 10	Census Division 11	Census Division 12	Census Division 13	Census Division 14	Census Division 15
	No.	No.	No.	No.	No.	No.	No.	No.
FARM MACHINERY								
Automobiles .....	4,734	113	7,543	6,319	2,347	4,158	443	4,555
Motor Trucks .....	6,048	184	8,196	7,137	3,069	5,670	737	7,150
Tractors .....	9,191	237	13,335	11,202	5,263	9,615	1,168	10,584
Grain Combines .....	3,174	19	5,277	3,484	1,139	2,973	121	4,421
Pick-up Hay Balers .....	1,437	51	1,966	1,735	462	1,041	131	854
ELECTRIC POWER								
Farms Reporting .....	5,524	126	6,924	6,951	2,264	4,798	479	4,291
Power Lines .....	5,386	95	6,738	6,788	2,153	4,646	413	4,061
Other .....	145	31	188	169	112	155	66	234

Table 47. LIVESTOCK AND POULTRY ON FARMS - BY CENSUS DIVISIONS - ALBERTA, 1961

	Alberta	Census Division 1	Census Division 2	Census Division 3	Census Division 4	Census Division 5	Census Division 6	Census Division 7
	No.	No.	No.	No.	No.	No.	No.	No.
LIVESTOCK								
Horses .....	113,222	3,846	5,668	8,082	7,105	6,093	13,451	9,028
Cattle .....	2,879,399	167,570	258,686	222,915	185,686	213,174	336,709	276,717
Hogs .....	1,469,969	15,553	86,080	34,838	11,028	77,326	92,747	70,583
Sheep .....	496,882	43,447	101,314	123,917	14,503	17,845	29,123	16,108
POULTRY								
Hens and Chickens ....	9,204,677	216,577	709,575	312,166	141,502	725,885	1,082,917	455,081
Turkeys .....	1,184,032	20,481	97,400	46,457	5,958	144,888	120,286	41,580
Ducks .....	93,309	3,249	16,604	15,339	3,629	5,964	4,235	4,481
Geese .....	89,827	3,264	16,864	11,937	2,010	6,774	6,035	3,719

	Census Division 8	Census Division 9	Census Division 10	Census Division 11	Census Division 12	Census Division 13	Census Division 14	Census Division 15
	No.	No.	No.	No.	No.	No.	No.	No.
LIVESTOCK								
Horses .....	9,549	2,588	13,437	9,114	8,166	6,673	1,613	8,809
Cattle .....	268,579	18,428	322,021	216,573	98,631	158,594	18,938	116,178
Hogs .....	177,376	1,346	248,285	217,824	128,543	183,660	11,278	114,497
Sheep .....	39,501	1,021	15,520	26,913	15,802	25,380	6,417	20,071
POULTRY								
Hens and Chickens ....	590,969	7,384	1,495,491	1,475,542	493,517	904,049	71,430	522,592
Turkeys .....	55,673	348	217,508	202,487	74,598	136,695	1,546	18,127
Ducks .....	4,405	38	13,531	10,418	3,149	6,539	435	1,293
Geese .....	5,166	54	9,175	8,772	4,430	7,302	736	3,589





*Alberta's large forest reserves lend themselves to the manufacture of a variety of wood products.*



*Modern gas processing plants are located in nearly every part of Alberta.*



## FORESTRY

Alberta has a large forest area where the rate of growth of merchantable species compares favourably with the rate of the same species in parts of Eastern Canada.

The authority for the administration of Crown timber lands is contained in the Forests Act, 1961, and its Regulations. The Act and the Forest Management regulations specify the powers of the Minister, the rights of the licensees, the methods of obtaining cutting rights, the methods of determining Crown timber charges, the penalties for infringements of the Act, and make provisions for additional requirements. The Act and Regulations provide for the continuation of established industry by giving the Minister authority to offer timber stands for sale to the public by tender or auction. Where forest management units are set up and timber is available and suitable for cutting, the timber license clauses limit the cutting of timber as to quantities and species.

Under special circumstances, the Minister, with the approval of the Lieutenant-Governor-in-Council may consummate an agreement whereby timber be made available for the establishment of an industry. Such an agreement was made in recent years and led to the establishment of a pulp mill at Hinton. Under the terms of this agreement the company was required to institute a forest management programme to ensure sustained yield. Similar agreements have been made with the plywood manufacturing firms. Poplar cutting rights on certain Crown lands have been reserved for these firms to assure a continuous supply of timber for their needs.

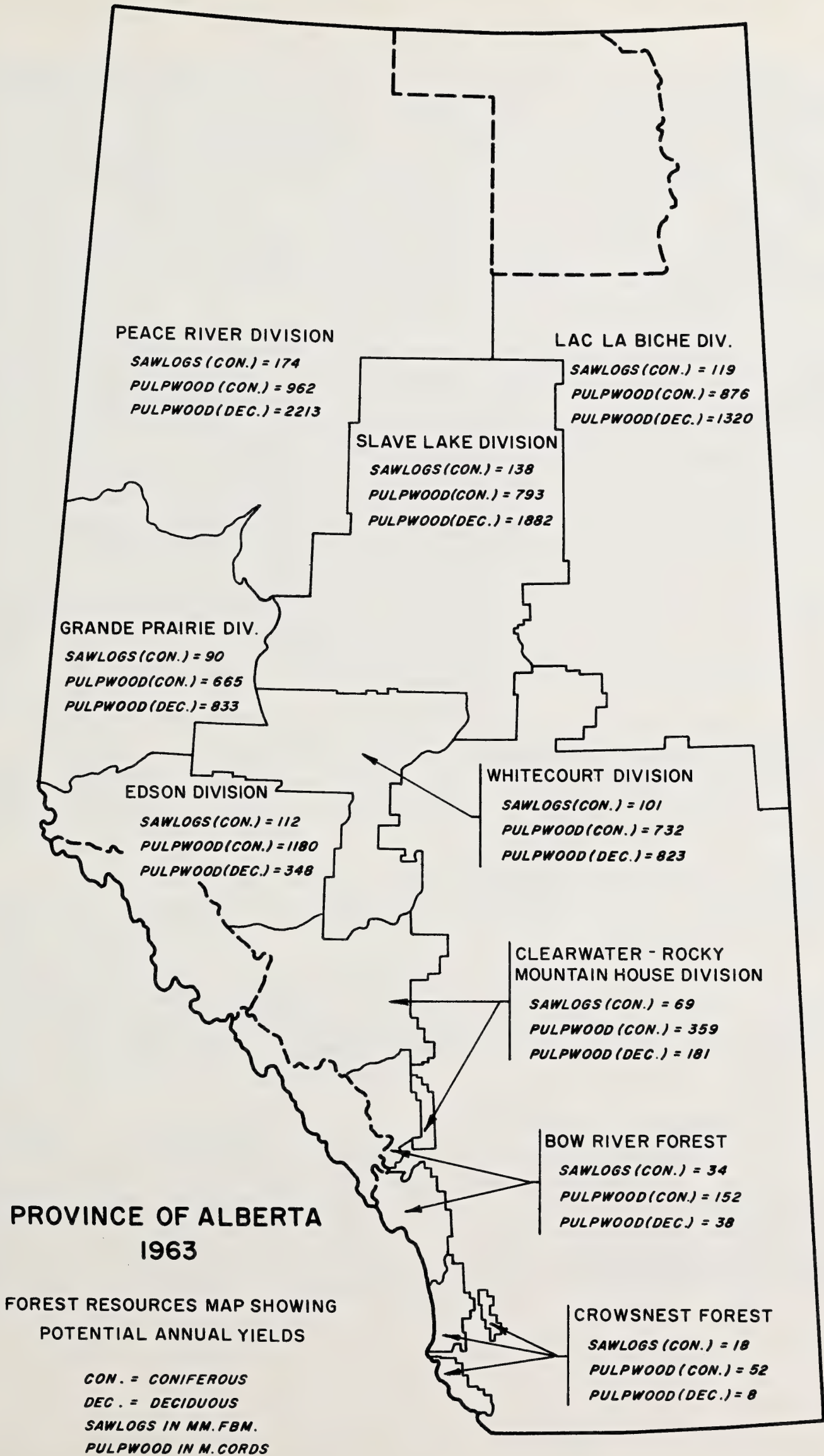
Only since 1930 have the forest lands in Alberta been under the control of the provincial government. Since then there have been major administrative changes affecting the forest region. For example, a joint Federal - Provincial body, the Eastern Rockies Forest Conservation Board, was set up to establish the policy for the Rocky Mountain Forest Reserve which is administered by the Alberta Forest Service. The prime objective of this Board is to protect and manage for optimum yield the water of the Saskatchewan River and its tributaries.

Two other types of major land divisions have been outlined. One involves the permitting of new land settlement for agriculture. The other concerns areas which have been reserved from settlement. The majority of the commercial forests of Alberta are situated in the latter division comprising approximately 150,000 square miles, including the Rocky Mountain Forest Reserve.

The forests were formerly regarded as handicapping the successful settlement of farm lands. Comparatively few citizens were vitally concerned about setting up a proper method of protection and administration which would assure the perpetuation of the forests. Thus forest fires, caused largely by carelessness, have done for more to reduce the merchantable stands of timber than has actual harvesting of forest products.

The Government of Alberta maintains a fire protection organization, co-operating with lessees and licensees for fire protection on the leased and licensed areas. Provincial legislation regulates the use of fire for clearing and other legitimate purposes, and enforces closed seasons during dangerous periods.





The fire-destroyed timber losses in Alberta in 1961 were estimated to be in excess of 156 million board feet of sawlog size timber and 125 million cords of pulp-wood size material. Much of this material is in accessible areas. There is sufficient wood fibre in this volume to sustain a pulp mill, the size of that at Hinton, operating at full capacity, for almost five years. Fire losses in 1956 were almost four times as great.

To be of permanent benefit to any locality, forest industries depend on the sustained producing power of the forest by species and size of tree at rotation age. Serious undercutting and overcutting must be avoided. Between 1950 and 1956 an inventory was made of the forest resources in the area reserved from settlement. The purpose was to determine actual forested area and to obtain estimates of timber volume by areas. The inventory consists of a classification of land in acres according to potential productivity and an estimate of the volume of merchantable timber 4 inches D. B. H. (diameter breast height) and up. The survey was completed in 1956 and has since been kept up to date to allow for major changes caused by fire and cutting.

In addition, an inventory of the Rocky Mountain Forest Reserve forestry resources has been completed. Thus a complete area and volume statement is now available for the forest land reserved from settlement. A summary of this information follows:

	Acres	Per Cent
Productive Forest Lands	40, 633, 104	42
Potentially Productive Forest Lands (old burns, recent burns, clear cut and windfall areas)	25, 850, 987	27
Non-Productive Forest Lands (alpine or barren, scrub of no commercial value, swamp, treed muskeg, water, mud flats, etc.)	29, 720, 358	31
TOTAL:	96, 204, 449	100 %

The productive forest land is computed to have a merchantable volume of 54,303 million cubic feet of wood in trees of 3.6 inches or greater in diameter at breast height. For conversion purposes, one cubic foot equals 5.29 feet board measure. This wood volume is broken down into the following proportions:

Coniferous Growth:	Per Cent	Millions of Cubic Feet
White Spruce	25	13, 325
Black Spruce	3	1, 570
Balsam Fir	2	1, 115
Jack and Lodgepole Pine	25	13, 678
TOTAL:	55 %	29, 688



Deciduous Growth:	Per Cent	Millions of Cubic Feet
Poplar, Aspen and White Birch	45	24, 615

With these overall surveys completed, management units averaging 1,000 square miles have been defined. Plans for these units include a cutting program regulated to maintain the yield, a statement on forest protection facilities with a minimum fire loss objective and an improvement program for each management unit to attain the desired objectives.

Although the lumber industry has dominated production from Alberta (323 million F.B.M. production during the 1962-63 fiscal year) the trend is toward more diversified utilization of timber reserves. It is obvious from detailed study of the forest inventory that this must occur if better use of our forest growth is to be attained. The future of the forest resources depends on the relationship between growth and depletion and the measures taken to effect a balance between the two.

In addition to these suggestions that Alberta's forest industry will be more diversified, are indications that markets will be readily available for the products. Following are some of the bases which substantiate this expectation. Lumber production is expected to continue high along with a high volume of construction. Fence post and pole production is increasing the utilization of our extensive pine stands in the foothills region. The pulp mill at Hinton assists greatly in utilizing pulp size material with an authorized input of up to 350 thousand cords. The construction of more pulp mills is expected.

White spruce has been our most important commercial species and therefore the most heavily exploited. It is, unfortunately, difficult to regenerate. The inventory has shown a reasonably plentiful supply of both pine and poplar, the other two major species growing in Alberta.

The inventory has shown that, by size, Alberta coniferous tree growth is more suited for pulpwood than for lumber. This, coupled with an abundance of potential power in gas and coal and a good supply of water, is conducive to expansion in the pulp and paper industry.

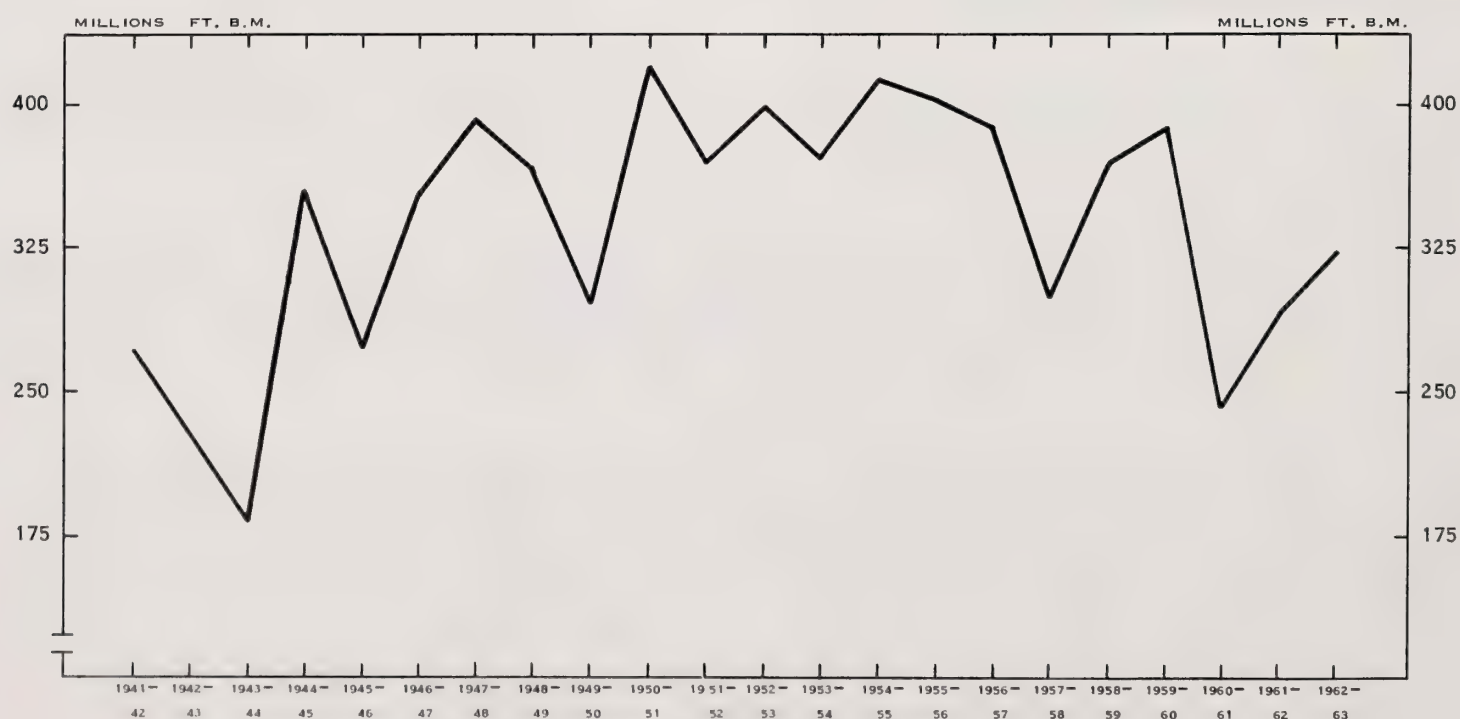
Plywood manufacturing in Alberta commenced in 1953. There are now three plants in operation which have an annual capacity of up to 60 million F. B. M. of coniferous and deciduous timber. With new uses being developed, plywood is being substituted more and more for sawn lumber.

Much could be done toward better forest resource conservation by establishing integrated by-product utilization plants for production of pulp, hardboards and other products made from wood fibre, chips, sawdust and shavings. A very important step toward better utilization of forestry resources would be the conversion of logging and sawmill waste into saleable products. In other parts of Canada, much has been done toward profitably salvaging such waste material. In some cases particle-board products replace plywood and lumber effectively, particularly where structural qualities are not of primary importance.

Table 48. ALBERTA FOREST PRODUCTION FROM CROWN LANDS  
(Includes Settlers' Permits) 1953-54 to 1962-63

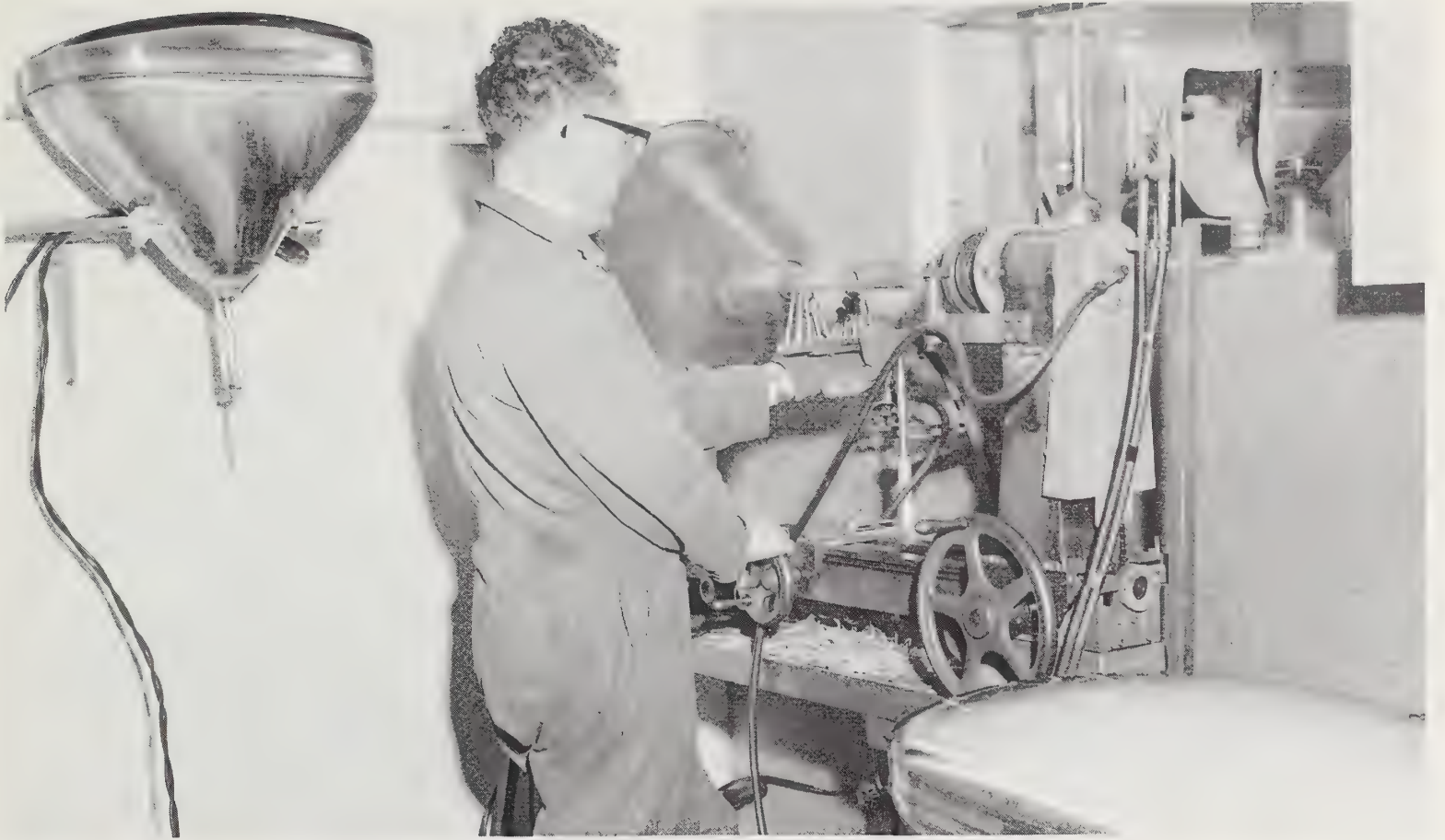
		FISCAL YEARS				
		1953-54	1954-55	1955-56	1956-57	1957-58
Christmas trees		-	-	-	-	8,948
Fuelwood	cords	6,325	6,229	6,044	11,591	11,998
Lath	pieces	2,131,164	1,610,035	1,006,700	1,615,950	1,568,850
Lumber	pieces	373,545,332	412,025,837	403,929,802	387,001,377	299,592,248
Mine ties	pieces	40,093	8,611	6,911	35,470	11,713
Pulpwood	cords	18,868	15,937	53,754	188,134	241,690
Plywood logs (poplar)	ft. B. M.	-	1,159,955	1,226,117	3,792,829	5,258,772
Plywood logs (coniferous)	ft. B. M.	-	-	-	-	2,987,410
Plugwood	cords	336	-	-	61	-
Railway ties	pieces	1,289,129	753,462	1,425,834	1,785,466	1,585,833
Round timber	lin. ft.	8,486,893	7,741,675	5,368,318	10,267,326	10,564,910
Shingles	pieces	152,690	-	-	24,444	30,000
Slabs	cords	-	-	-	-	-

		FISCAL YEARS				
		1958-59	1959-60	1960-61	1961-62	1962-63
Christmas trees		13,231	21,866	25,539	17,070	28,538
Fuelwood	cords	13,331	10,505	20,286	8,420	13,442
Lath	pieces	1,397,225	1,665,550	1,602,620	2,685,911	3,424,741
Lumber	ft. B. M.	367,020,452	386,404,757	242,632,650	288,231,425	322,887,019
Mine ties	pieces	7,574	6,154	13,641	27,021	14,742
Pulpwood	cords	214,321	258,111	326,653	271,235	283,624
Plywood logs (poplar)	ft. B. M.	11,324,734	13,684,742	8,094,951	12,865,018	14,377,825
Plywood logs (coniferous)	ft. B. M.	6,311,673	11,854,774	10,881,891	20,191,608	23,337,564
Plugwood	cords	-	-	-	-	-
Railway ties	pieces	958,655	798,119	420,085	210,864	641,412
Round timber	lin. ft.	11,569,346	14,443,390	22,760,567	19,870,955	29,466,406
Shingles	pieces	18,000	4,000	-	25,005	11,145
Slabs	cords	-	25	-	479	439



LUMBER PRODUCTION, ALBERTA, 1941-42 TO 1962-63

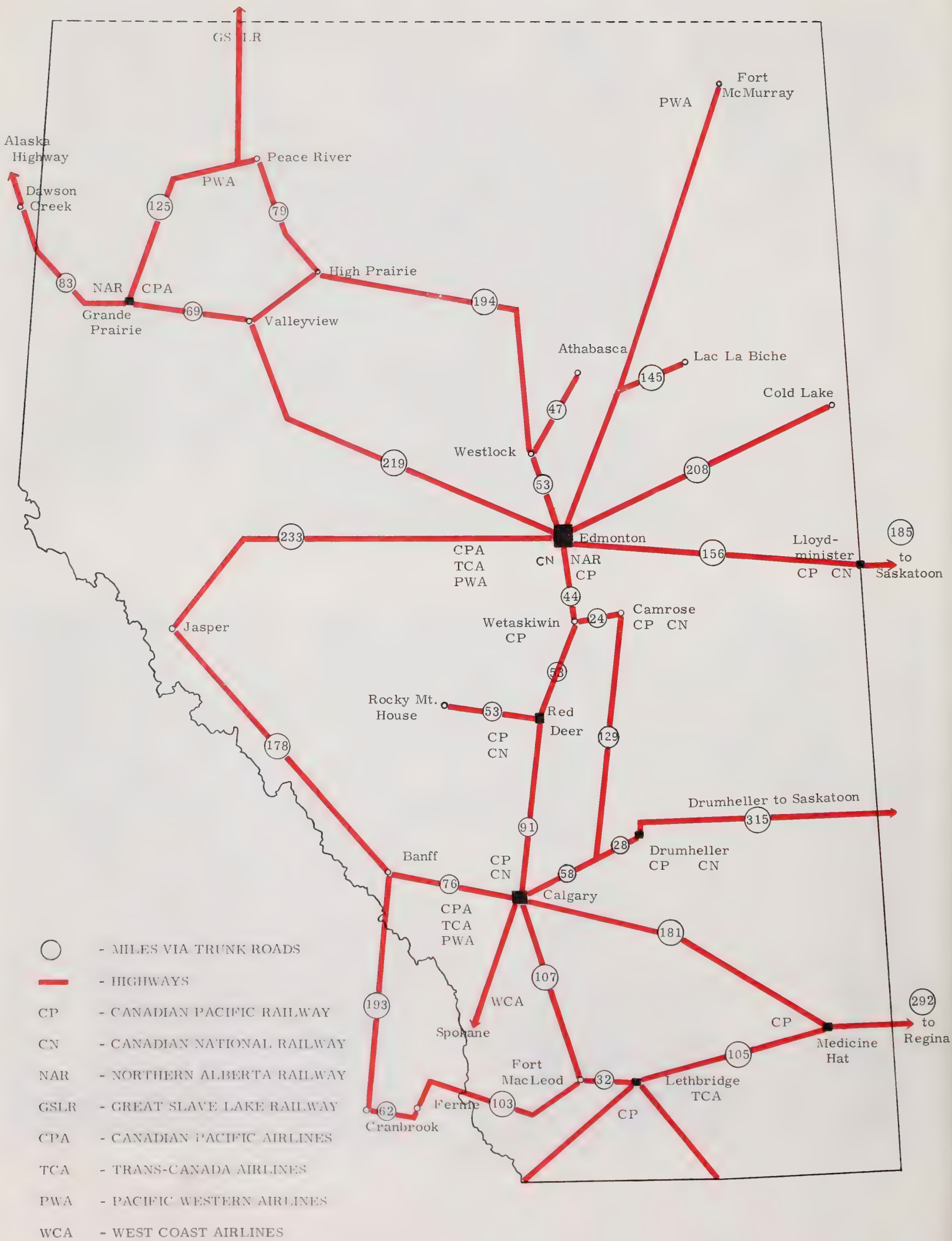




*Television tubes are reconditioned in this Calgary plant.*



*Alberta beef is known to be the finest in the world.*





The provincial government and municipalities have carried on an active programme of road improvements and road building. The table below shows the comparative mileage of various types of roads in Alberta in 1958 and 1962. During this four year period, 1,153 miles of road have been paved. This is an increase of 42 per cent.

Table 49. MILEAGE - HIGHWAYS AND ROADS, ALBERTA  
1958 and 1962

		<u>Earth Miles</u>	<u>Graded Miles</u>	<u>Gravelled Miles</u>	<u>Bituminous Surfaced Miles</u>	<u>Total Miles</u>
Main and Secondary Highways:						
	1958	69	-	2,958	2,705	5,732
	1962	52	-	2,316	3,826	6,194
District and Local Roads:						
	1958	24,037	22,030	35,553	45	81,665
	1962	21,591	16,503	46,036	58	84,188
Access Roads:						
	1958	-	-	26	8	34
	1962	-	-	80	27	107
TOTAL:						
	1958	24,106	22,030	38,537	2,758	87,431
	1962	21,643	16,503	48,432	3,911	90,489

Roads are being constructed to remote and isolated areas of the province to aid in economic development and to attract tourist traffic. A road is being constructed from High Level on the Mackenzie Highway to Wood Buffalo National Park. Current plans of the Alberta Department of Highways call for completion of a road from Plamondon to Fort McMurray by 1967.



*One of the few North American companies manufacturing plastic foam insulation board is situated in Edmonton.*

# MOTOR VEHICLES

There has been a rapid increase in motor vehicle registrations in recent years. In 1957 there were 405,000 motor vehicles registered in Alberta. By 1961, total motor vehicle registrations reached 509,000; one motor vehicle for every 2.6 Albertans. This is the highest vehicle-to-population ratio in Canada. The following table on vehicle registrations shows the distribution of motor vehicles within the province.

Table 50. NUMBER OF PASSENGER AND COMMERCIAL MOTOR VEHICLE REGISTRATIONS, BY CENSUS DIVISION AND MAJOR CENTRES, ALBERTA  
REGISTRATION YEAR, APRIL, 1961 - MARCH 31, 1962

Census Division and Major Centres	Passenger	Commercial	Total
DIVISION NO. 1	11,254	4,548	15,802
Medicine Hat	8,144	1,982	10,126
DIVISION NO. 2	22,046	11,005	33,051
Lethbridge	11,587	2,630	14,217
Taber	1,648	1,062	2,710
DIVISION NO. 3	6,960	4,636	11,596
DIVISION NO. 4	3,253	2,781	6,034
DIVISION NO. 5	9,205	7,502	16,707
Drumheller	1,456	684	2,140
DIVISION NO. 6	99,866	25,660	125,526
Calgary	86,607	17,845	104,452
Olds	1,381	811	2,192
DIVISION NO. 7	10,247	6,705	16,952
Stettler	1,519	651	2,170
DIVISION NO. 8	19,880	9,985	29,865
Innisfail	1,379	806	2,185
Lacombe	1,653	803	2,456
Ponoka	1,989	896	2,885
Red Deer	6,480	1,543	8,023
DIVISION NO. 9	4,998	1,295	6,293
DIVISION NO. 10	15,973	10,575	26,548
Camrose	2,391	737	3,128
DIVISION NO. 11	117,010	31,847	148,857
Edmonton	96,387	20,668	117,055
Wetaskiwin	2,147	863	3,010
DIVISION NO. 12	8,586	4,699	13,285
Cold Lake	2,408	148	2,556
DIVISION NO. 13	8,597	7,430	16,027
DIVISION NO. 14	4,104	2,340	6,444
DIVISION NO. 15	13,695	11,374	25,069
Grande Prairie	2,722	988	3,710

Movement of materials by truck transport continues to increase. Discontinuation of rail services on uneconomical lines will undoubtedly result in an increase in local truck traffic.

In 1961 there were an estimated 127,100 trucks providing transportation services registered in Alberta. Approximately 1,460 million net ton-miles of trans-

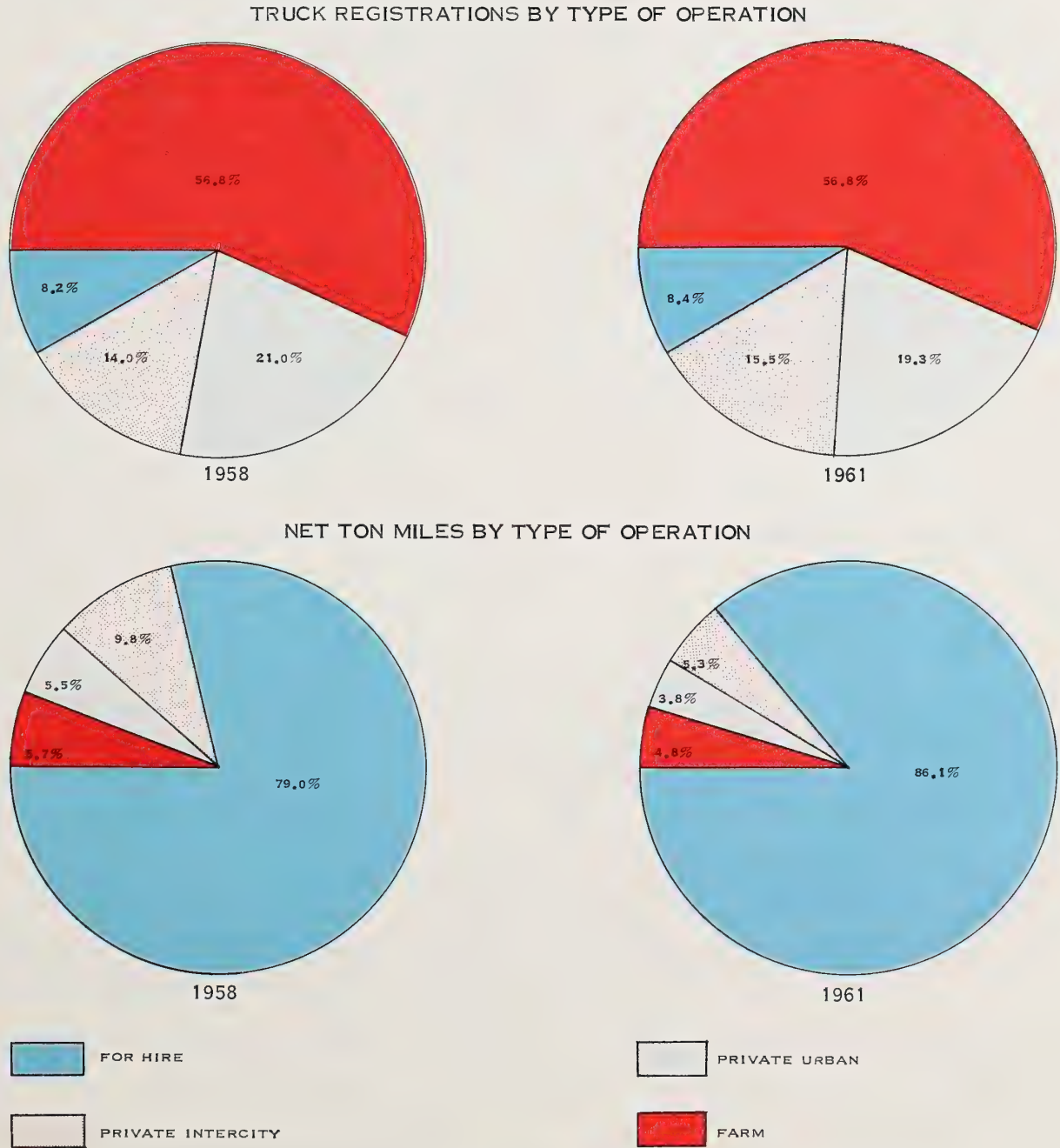


portation was provided; an average of 11,500 net ton-miles per vehicle. It should be noted that these figures are heavily weighted by private intercity, urban and farm vehicles. For hire vehicles travelled an average of 101,300 net ton-miles per vehicle. This represents 50.7 per cent utilization of load carrying capacity for this type of vehicle.

Transportation service by motor transport is chiefly on a competitive basis as compared to the government regulated rate structure of the railway. Restrictions on motor transport are imposed on length, gross weight and per axle weight of vehicles.

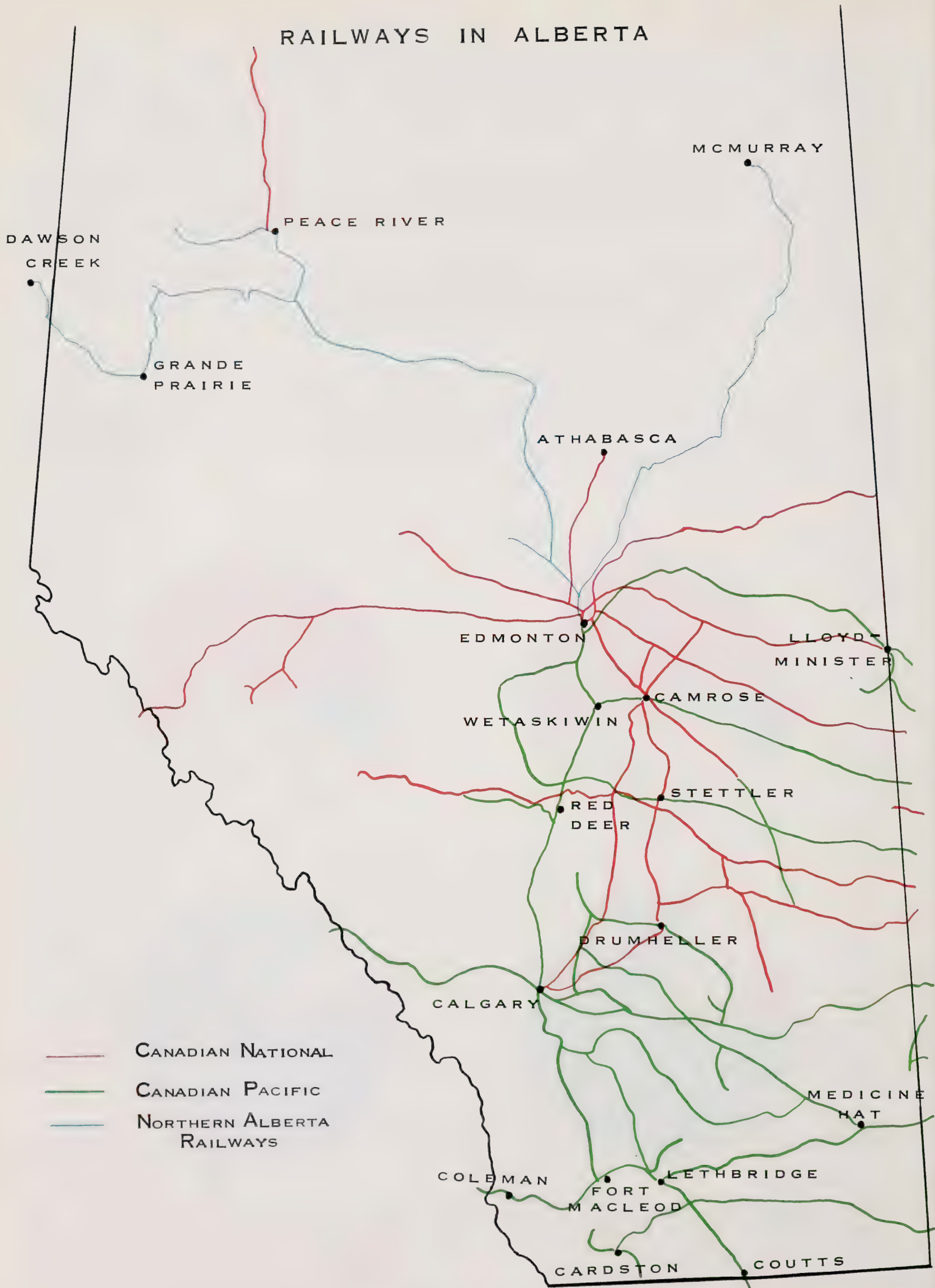
Fuel consumption by the motor transport industry in 1961 was 73 million gallons of gasoline, 7.3 million gallons of diesel oil and 0.5 million gallons of other fuels. Average miles per gallon for gasoline trucks was 9.9; for diesel trucks 6.0; and for trucks consuming other fuels 7.0 miles per gallon.

In view of the present active programme of improvement of provincial highways, it is certain that there will be still further increases in the comparative volume of goods carried by highway motor transport rather than railroad. This trend may be offset to some degree by the provisions of "piggyback" whereby truck-trailer units are carried by railroads on intercity routes.



TRUCK REGISTRATIONS AND NET TON MILES BY TYPE OF OPERATION  
ALBERTA, 1958 AND 1961

## RAILWAYS IN ALBERTA





# RAILWAYS

Alberta is served by three railway companies: the Canadian National Railway; the Canadian Pacific Railway; and the Northern Alberta Railway which is owned jointly by the other two. The Canadian Pacific Railway and the Canadian National Railway are transcontinental systems and ensure allweather, year round, access for Alberta raw and manufactured products to world markets. Feeder lines, built before motor trucks provided farmers with a means of hauling agricultural produce for long distances, form an interconnecting network linking the majority of communities. At present these feeder lines are used mainly for the transportation of bulky cargoes, such as grains and coal, but their presence makes possible the location of industries at any point close to raw materials.

The major Alberta termini of the transcontinental railways are Calgary, Red Deer and Edmonton. The Canadian Pacific Railway western terminus is at Vancouver; the Canadian National Railway has termini at Prince Rupert and Vancouver.

RAILWAY MILEAGE IN ALBERTA, 1963

Canadian Pacific Railway - main line .....	2, 549
- Spurs, Sidings, Yard Tracks .....	743
Canadian National Railway - main line .....	2, 196
- Spurs, Sidings, Yard Tracks .....	664
Northern Alberta Railway - main line .....	923
- Spurs, Sidings, Yard Tracks .....	135
	<u>7, 210</u>

The cities of Medicine Hat, Lethbridge, Edmonton, Calgary, Red Deer, Wetaskiwin, Lloydminster and Camrose are served by the Canadian Pacific Railway lines. Edmonton, Drumheller, Camrose, Calgary, Red Deer and Lloydminster are on the Canadian National Railway Lines. Grande Prairie is served by the Northern Alberta Railway through Edmonton and by the P.G.E. via Dawson Creek to Vancouver. Speaking generally the Canadian Pacific Railway serves the area south of Red Deer; the Canadian National serves the Edmonton area; and the Northern Alberta Railway serves both the Peace River district and the area to the northeast of Edmonton, terminating at Waterways. However, this generalization must be seriously qualified: the central area of Alberta north of the main line C.P.R. and south of the main line C.N.R. is laced by a network of the lines of both major companies such that most cities and many towns have access to services of both railways.

The completion of the Great Slave Lake Railway in 1966 will undoubtedly have far reaching effects on the economy of the area through which it passes. Certainly immediate benefits from lower cost transportation will accrue to the agricultural, lumber and mining industries.

Undeniably, Alberta consumers have suffered through being at the apex of the freight rate structure. Rates on manufactured products coming into, or leaving, Alberta are higher than for points in other provinces. Rates on grains are fixed by statute; and on coal are alleviated by federal rail subsidies.

Industries serving local or prairie markets may find the freight structure to their benefit. Freight rates on competitive products become a form of protection,

provided the raw materials are locally obtainable.

To industries serving continental or world markets the benefits are more dubious. The cost of transporting Alberta raw materials to a distant point for processing as compared with cost of moving finished or semi-finished goods may be the final factor in arriving at a decision to manufacture locally.

Both on raw materials and on finished products, special freight charges can be negotiated with the railroads. Manufacturers would be emphatically well advised to negotiate these charges prior to initiating construction of plant property. At this stage more favourable charges can often be agreed upon because of the possibility of losing an account to either a competitive railway or to trucking interests. Prior to construction alternative economic sites can always be chosen.

In assessing potential market areas for Alberta manufacturers, several factors must be considered. On products subject to class rates, Alberta products can be shipped into eastern Manitoba, or western Ontario as far as Fort William as cheaply as from Toronto-Montreal-Sudbury triangle.

The so-called "bridge subsidy", whereby the federal government contributes \$7 million to reduce freight transit costs over the non-productive areas extending from Fort William to Sudbury, works to the detriment of Alberta manufacturers selling in the Lakehead area, and to the benefit of Alberta manufacturers selling in the area east of Sudbury.

Where raw materials are available in Alberta, the Alberta manufacturer has a competitive advantage over his eastern Canada trade rivals in the British Columbia market. However, where raw materials must be brought in it is found frequently that the materials cost more laid down in Alberta than does the eastern manufactured product in the Pacific coast market. In these instances the manufacturer is well advised to negotiate special rates before beginning operations.

The impact of commodity rates defies easy generalization. Each commodity has to be studied individually. For each, the area where rates from eastern manufacturers would equalize with those for an Albertan manufacturer, would have to be determined. In this case as well, the charges should be negotiated in advance of plant construction.

The railways are subject to considerable competition from trucking concerns. The large-volume movement of truck traffic is from eastern to western Canada, and accordingly many truck rates are high enough to cover round trip costs. Truck traffic moving eastward is less in volume and freight rates accordingly are somewhat lower because of the more competitive situation. The railways endeavour to meet this competition by quoting "truck competitive rates" or by arranging "agreed charges".

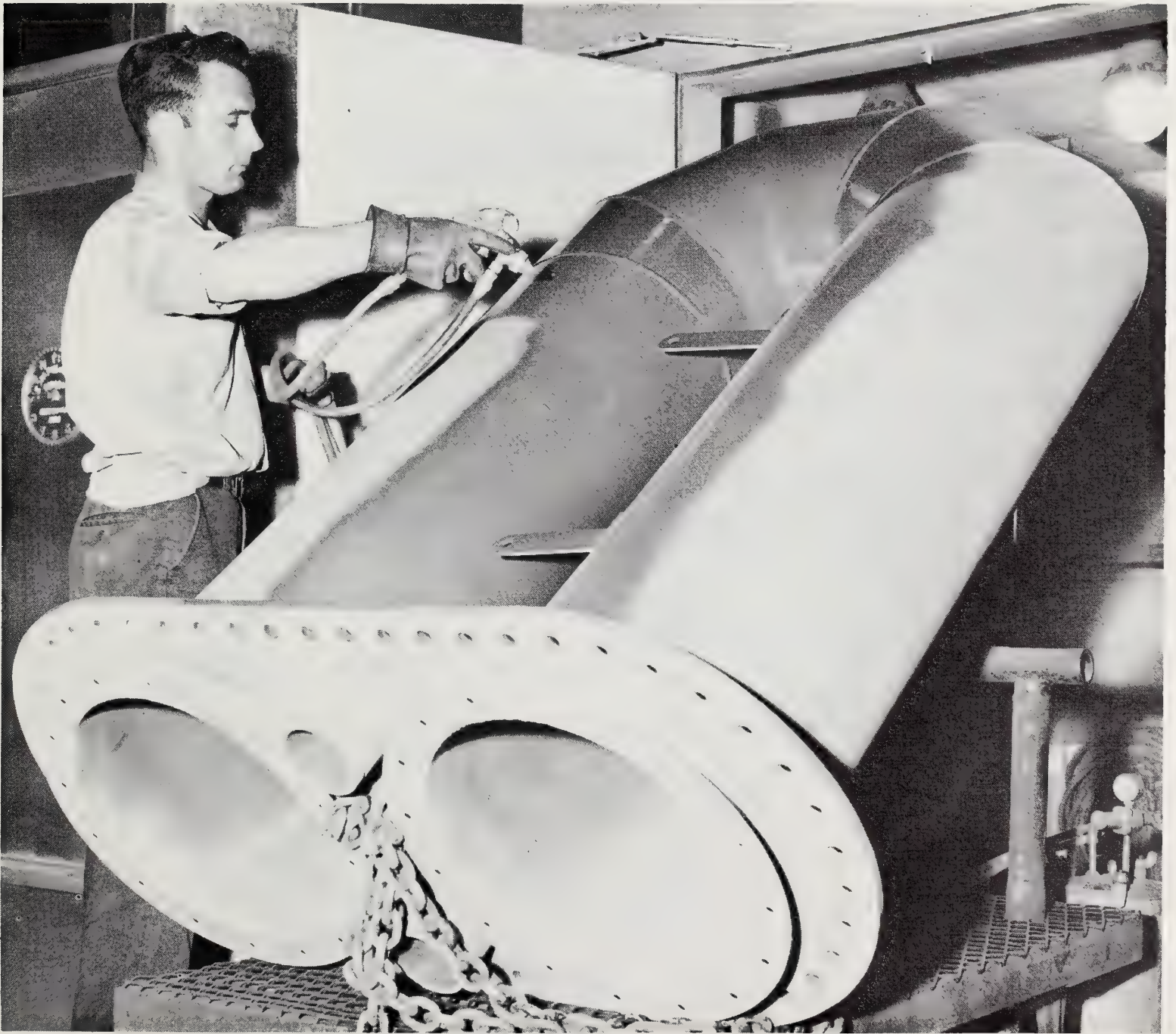
"Interswitching" is a problem which is becoming more and more important to Alberta cities as their industrial and warehousing areas expand. This problem comes more to the fore in western Canada because of the limited number of interchanges which are required by only two major railways meeting as compared with the numerous interchanges developed by the smaller lines in the east before they were formed into the two



major companies.

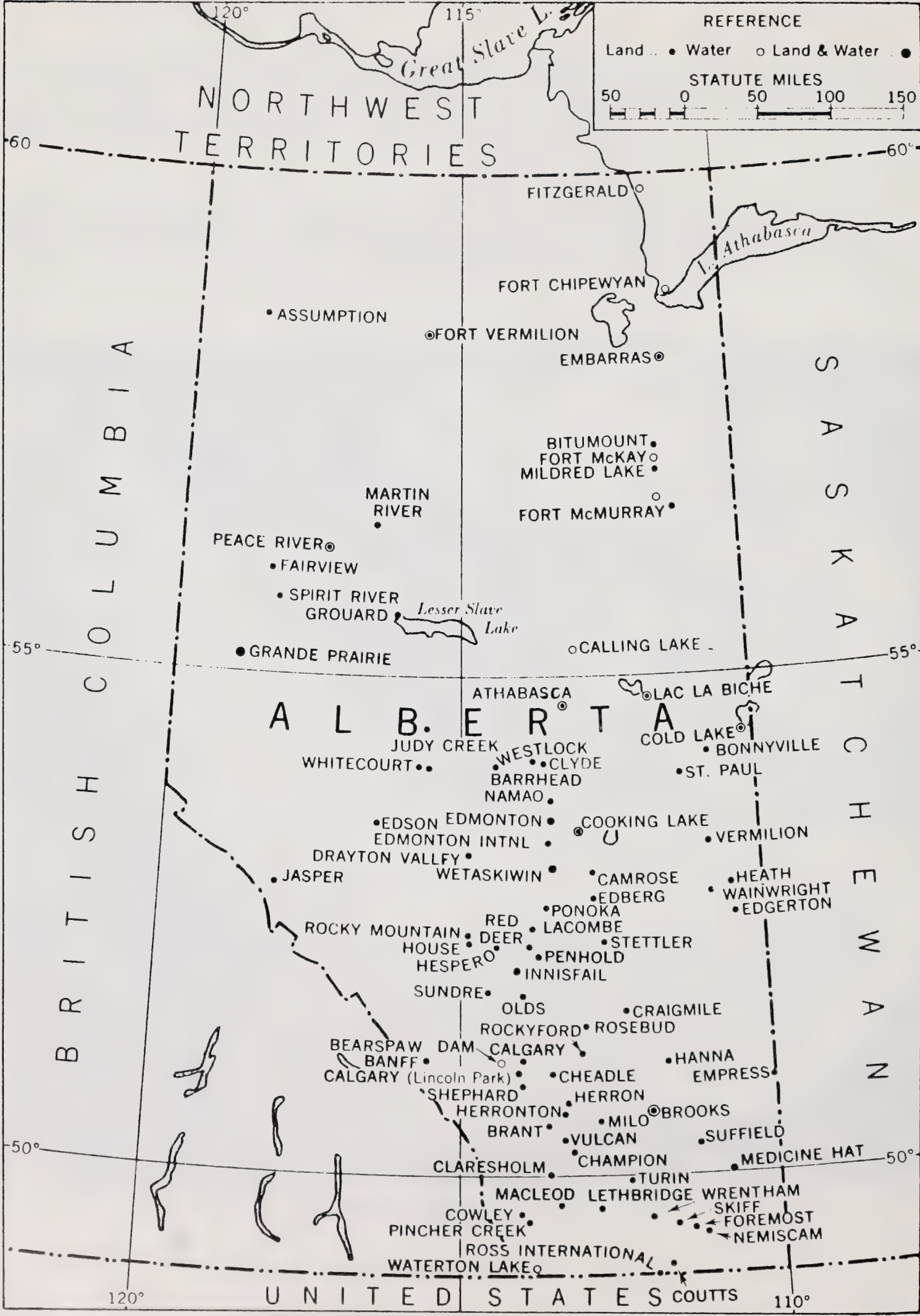
The area covered is four track miles from the physical connection designated as the switching limits. Any industry located beyond the four mile limit must pay a local rate into the point of interchange and a local rate beyond. In this rate situation or even if interline rates are negotiated on a lower basis, a company outside the switching area will be faced with a larger freight bill.

The cost of all perishables which go into construction of a private siding, or spur line, is paid by the shipper. The rails and angleiron may be purchased outright or arrangement made for rental at 7 per cent per year. The industry also pays a maintenance charge which may vary from year to year.



*Corrosion-resistant plastic coating is manufactured and applied at an Edmonton plant.*

ALBERTA



Produced by Surveys and Mapping Branch,  
Department of Mines and Technical Surveys.



## AVIATION

Aviation has played a very important part in the economic development of Alberta. Since the early 1920's aeroplanes have been used to transport men, machinery and supplies throughout the province and to relatively inaccessible area of the Canadian north.

Several airways serving the Province of Alberta spread out to adjoining provinces, the United States and the north country.

AIRWAY GREEN 1 ----- From Gander, Newfoundland to Vancouver, British Columbia. It passes through Medicine Hat, Lethbridge and Cowley (near Pincher Creek).

AIRWAY AMBER 2 ---- From Lethbridge, Alberta, to Fairbanks, Alaska, It passes through Lethbridge, Calgary, Penhold, Edmonton, Whitecourt and Grande Prairie. At Lethbridge it is joined by Airway V21 to Great Falls, Montana.

AIRWAY RED 6 ----- From Edmonton, Alberta, to Winnipeg, Manitoba. It passes through Edmonton, Vermilion and Lloydminster.

AIRWAY RED 75 ----- From Edmonton, Alberta, to Princeton, B.C. It joins Airway Green 1 at Princeton.

AIRWAY BLUE 3 ----- From Calgary, Alberta, to Cranbrook, B.C. It joins Airway Green 1 at Cranbrook.

AIRWAY BLUE 84 ----- From Edmonton, Alberta, to Yellowknife, N.W.T. It passes through Edmonton, Fort McMurray, and Fort Chipewyan. At Yellowknife it joins Blue Route 84 to Cambridge Bay, N.W.T. and Amber Route 6 to Inuvik, N.W.T.

AIRWAY V301 ----- From Lethbridge to Edmonton. It joins V21 to Great Falls, Montana at Lethbridge.

AIRWAY V302 ----- From Edmonton, Alberta, to Winnipeg, Manitoba, via Vermilion.

AIRWAY V306 ----- From Calgary, Alberta to Brandon, Manitoba via Empress. At Brandon it joins other airways to Winnipeg.

In 1960 a new era dawned for Canadian aviation. In April of that year Trans-Canada Airlines inaugurated its domestic D C-8 jet passenger service; Canadian Pacific Airlines began using jets in April 1961, thus decreasing further the travelling time between the major centres of Canada.

This new development in air travel required, in some cases, construction of new airport facilities and in other cases lengthening and strengthening of existing runways.

Airport facilities at the new Edmonton International airport are designed to

handle this new type of traffic. In the fall of 1960 the runways of McCall Field at Calgary were lengthened to accommodate the large jet aircraft.

Table 51. MAIN AIRPORTS - ALBERTA

AIRPORTS	RUNWAYS	RADIO AIDS	WEATHER	SERVICES
Calgary	Hard surfaced 12,675' x 200' 8,000' x 200' 6,200' x 150'	Low frequency range, VOR, 2 Instrument landing systems, Surveillance radar	Continuous forecast service	Hangars Repairs, fuel and oil, telephone, telegraph, bus and taxi. Customs port of entry and exit.
Edmonton International	Hard surfaced 11,000' x 200' 10,200' x 200'	VOR, 3 Low frequency beacons, Instrument landing system, Surveillance radar	Continuous forecast service	Fuel and oil, telephone, telegraph, bus and taxi. Customs port of entry and exit.
Edmonton Municipal	Hard surfaced 4,650' x 200' 3,626' x 200' 3,450' x 200'	Low frequency range, Instrument landing system, Surveillance radar	Continuous forecast service	Hangars, maintenance, repairs, fuel and oil, telephone, telegraph, bus and taxi. Customs port of entry and exit.
Fort McMurray	Hard surfaced 6,000' x 150'	Low frequency beacon	Continuous meteorological teletype service	Fuel and oil, telephone, telegraph and taxi.
Grande Prairie	Hard surfaced 6,500' x 200' 6,200' x 200'	Low frequency range	Continuous meteorological teletype service	Hangars, gas and oil, telephone, telegraph and taxi.
Lethbridge	Hard surfaced 6,500' x 150' 5,500' x 150'	Low frequency range, Instrument landing system, VOR	Continuous meteorological teletype service	Hangar, minor repairs, fuel and oil, telephone, telegraph, taxi. Customs port of entry and exit.
Medicine Hat	Hard surfaced 4,400' x 150' 2,820' x 150' 2,750' x 150' New 5,000' run- way being built.	Low frequency range, VOR	Continuous meteorological teletype service	Minor repairs, fuel and oil, telephone, telegraph, taxi. Customs port of entry and exit for tourists only.
Peace River	Hard surfaced 5,000' x 150' Turf - 1,900' x 150'	Low frequency beacon	Continuous meteorological teletype service	Fuel and oil, telephone, telegraph and taxi.

In 1963 Pacific Western Airlines pioneered a unique "Air Bus" passenger service (no reservations required) between Edmonton's Municipal airport and Calgary.

Pacific Western Airlines and Canadian Pacific Airlines are the only commercial airlines serving northern Alberta and the North West Territories with scheduled flights originating in Edmonton.



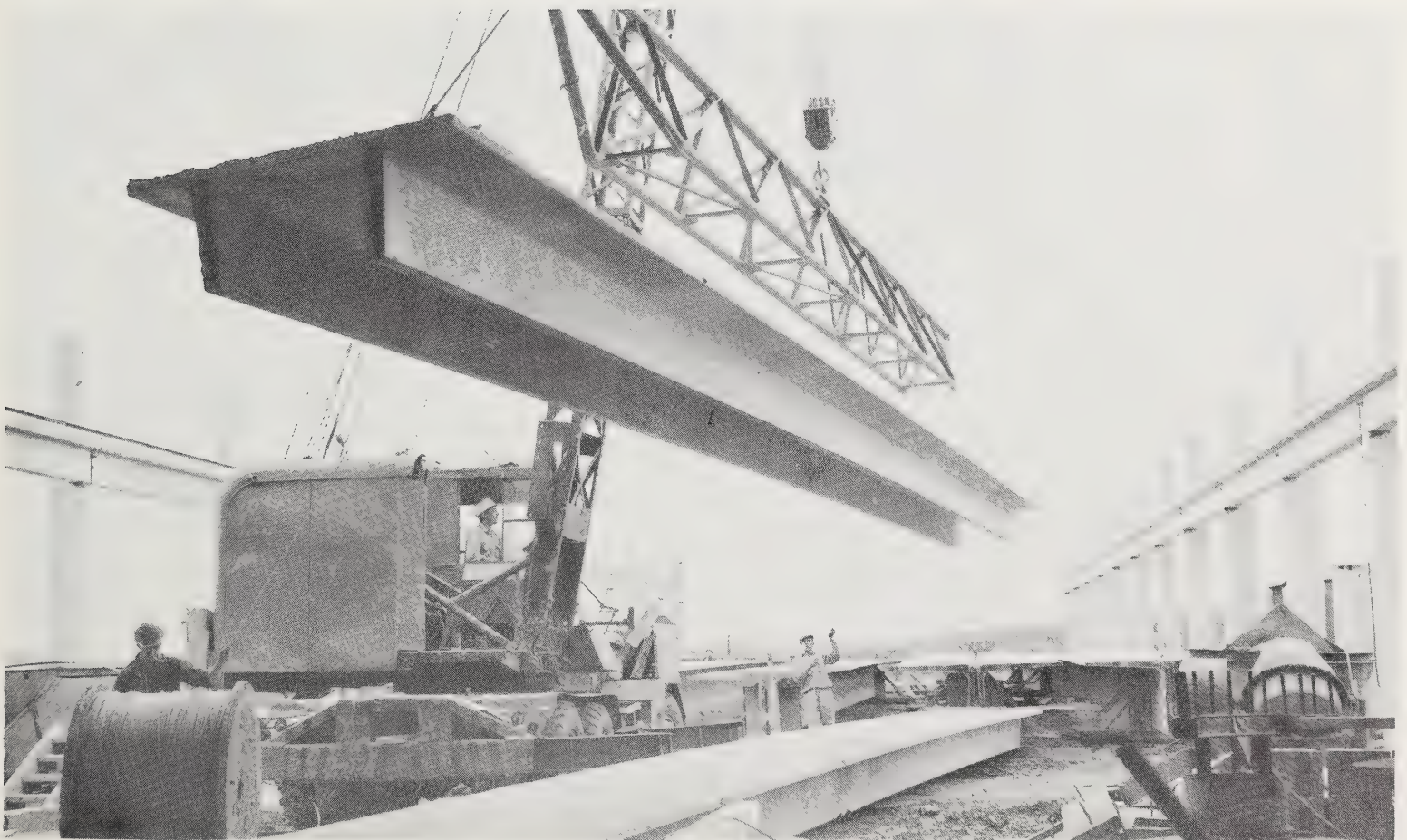
Canadian Pacific Airlines serve Fort St. John, B.C. and Whitehorse in the Yukon. Pacific Western Airlines serves Fort McMurray, Hay River, Norman Wells and Inuvik to mention only a few centres. Float or ski equipped Otter aircraft provide the smaller communities with connecting flights to Pacific Western's regular routes.

In addition to the commercial airlines a number of smaller airlines provide charter service throughout Alberta and in the North West Territories.

There has been a substantial increase in air freight movements in recent years. Many of the products which once moved by air freight were frequently fragile, perishable or of high intrinsic value and hence high retail value.

However, this is not necessarily the case today. Many products which were at one time transported by rail now move by air freight. For example, furs, fresh seafood, cosmetics, in large quantities, hatchery eggs, data processing equipment, machinery and machinery parts are moving, in increasing quantities, by air freight. Movement of goods by air freight will undoubtedly continue to increase as new types of equipment, additional services, and cheaper air freight rates are made available to the shipper. The speed of air service can offer savings in total costs which more than offset the initially higher transportation costs.

Trans-Canada Airlines began a new type of freight service in 1963 when they introduced their D C-8F jet Trader, capable of transporting 94,000 pounds of freight at over 540 miles per hour.



*Prefabricated concrete beams for a school building being stockpiled at an Edmonton plant.*



NORTHERN TRANSPORTATION CONNECTIONS  
ORIGINATING IN ALBERTA



# WATER TRANSPORTATION

The importance of water transport to Alberta lies in the fact that the Mackenzie River system facilitates the northbound movement of all types of freight. It is approximately 1700 miles from the railhead at Waterways, Alberta, to Tuktoyaktuk on the Arctic coast. With the routes which branch out of the three principal lakes, Athabasca, Great Salve, and Great Bear, there are an estimated 2770 miles of navigable water.

Water transportation, once the only means of freighting goods into the north, is steadily declining in importance. Continued economic pressure to reduce operating costs resulted in a noticeable shift from water to highway freighting after completion of the all-weather Mackenzie Highway. A further shift in the freighting pattern will undoubtedly take place upon completion of the Great Slave Lake Railway, providing the second all-weather transportation route to Hay River, N.W.T.

Increases in air freight movements have also affected water freight movements into the north.

As can be seen from the following table the total volume of northbound freight movements have been decreasing steadily since 1958.

WATER FREIGHT MOVEMENTS NORTHBOUND AND SOUTHBOUND, 1957-1962						
Year	NORTHBOUND From			SOUTHBOUND From		
	Waterways tons	Hay River tons	Total Northbound tons	Waterways tons	Hay River tons	Total Southbound tons
1957	134, 174	26, 407	160, 581	10, 458	8, 397	18, 855
1958	168, 528	35, 276	203, 804	13, 426	8, 048	21, 474
1959	119, 204	46, 925	166, 129	8, 167	13, 590	21, 757
1960	85, 077	39, 202	124, 279	16, 650	18, 946	35, 596
1961	75, 393	39, 830	115, 223	11, 096	15, 559	26, 655
1962	62, 235	37, 176	99, 411	13, 941	22, 115	36, 056

Factors which have contributed to this overall decline in water shipments are the completion of construction at uranium mine sites, depressed markets for uranium, construction and abandonment of D E W line sites, and in some cases closure of mines because of depletion of ore reserves. Should the uranium markets firm up there will undoubtedly be an upturn in northbound water freight.

In 1964, Yellowknife Transportation Company Limited, in conjunction with Pacific Western Airlines, began a new type of passenger service which operates between Hay River and Tuktoyaktuk on the Arctic coast. A 55 passenger luxury liner offers a 7 day downstream and a 14 day upstream cruise.

In 1938, a maximum of 10,000 tons of freight was carried to, from and within the north. The corresponding volume in 1957 was approximately 222,300 tons, while in 1962 it was only 144,000 tons. In 1962, 6 per cent of all freight movements were by air while the remaining 94 per cent were by water. Of the tonnage freighted in 1962, approximately 73 per cent moved northward and 27 per cent moved southward.

## COMMUNICATION MEDIA

The residents of Alberta are well served by communication media.

In 1963, six daily newspapers in the province had an estimated total average daily circulation of 280,000. There were approximately one hundred weekly, English language, newspapers, as well as a number of weekly foreign language and religious newspapers.

The nineteen radio stations in the province provided service to approximately 350,000 households. Calgary and Edmonton each had five radio stations; Lethbridge had two. The remaining seven cities had one station each.

Eight television stations were in operation throughout the province. Calgary and Edmonton had two each, while Lloydminster, Red Deer, Lethbridge and Medicine Hat had one each. Nine re-broadcasting stations in smaller centres were operated by three of the major stations. Television services reached an estimated 295,000 households.

As of March 31st, 1962 there were 432,000 telephones in operation throughout the province. Two hundred-sixty thousand were owned by the Alberta Government Telephone System; 33,000 by rural mutual companies; and 139,000 by the City of Edmonton, the only private telephone system in the province.

During 1962, the citizens of the MacKenzie District of the Northwest Territories were given commercial telephone connections with the rest of the vast telephone network in Canada via the Peace River-Hay River microwave system. Expanded microwave plant from Coutts to Grande Prairie connected to a new Canadian National Telecommunications microwave system to the Alaska border provided increased service to the Northwest Territories and Alaska.

In 1962, the first installation of Direct Distance Dialing service took place in the Red Deer and central Alberta area.

Telegraph systems in Alberta are operated by the Canadian National, Canadian Pacific and Northern Alberta Railway companies.

Modern microwave systems are rapidly taking over the function of telegraph or written record communication systems. These new systems are capable of carrying radio network programmes, providing facsimile transmission of weather maps, private service, Telex and airport and airway traffic control.



# LABOUR

Co-operation between management, labour and government is essential to industrial harmony. To promote this harmony it has been the government practice that all changes, either in the Labour Act itself or in the orders and regulations issued pursuant to the Act, be discussed with labour, management and public bodies concerned before any amendments are made. As a result, labour legislation in Alberta is modern, tailored to fit the trend of the times, and conducive to the establishment and maintenance of industrial peace.

The Alberta Labour Act governs labour-management relations and the administration of the Act is carried out by the Board of Industrial Relations. The Act consists of seven parts, covering: Hours of Work; Minimum Wages; Holidays with Pay; Industrial Standards; Conciliation and Arbitration; Equal Pay; and a General Section. The Act applies to all employees except farm labourers and domestic servants in private homes, and their employers.

The record of industrial peace in Alberta is an indication of the soundness of the Alberta Labour Act and its acceptance by employers, employees and the public in general. According to the federal Department of Labour, over a period of many years the man days lost through work stoppages in relation to industrial working time is lower than for any other province.

Work stoppages are not common. Almost 70 per cent of all disputes have been settled at conciliation tables. Since 1950 there have been only 46 legal strikes. Illegal work stoppages, except for flash-in-the pan affairs, are almost unknown.

There can be no doubt that this tradition of industrial harmony is a proven, encouraging factor influencing potential investors.

## TECHNICAL AND VOCATIONAL TRAINING IN ALBERTA:

Alberta has established an apprentice training program for many trades. Apprentices are indentured to employers who provide on-the-job training and experience. Daytime technical school training is provided under the terms of the Federal-Provincial Apprentice Training Agreement and is made available at the Institutes of Technology at Edmonton and Calgary. The many trade courses are established and periodically reviewed by advisory committees of employers, employees, instructors and apprenticeship supervisors.

The Alberta Apprenticeship Act (1944) makes provision for representative groups of employees and employers throughout the province to request that an apprenticeship training program be organized for a trade. When such requests are approved (designated) the Act provides the necessary means for planning and carrying on a training programme. To date (September, 1963) 24 trades have been designated. A total of 9200 apprentices have been graduated with Completion of Apprenticeship Certificates. Some 5300 apprentices are currently indentured in the designated trades.

Journeyman certification is also well established. In certain trades, certification is on a voluntary basis. In others, where matters of safety and public health are of prime consideration, the journeyman certificate is required by provincial regulation and learners must be indentured in accordance with the Alberta Apprenticeship Act.

The provincial Apprenticeship Board co-operates with the Training Branch of the federal Department of Labour in the adoption of interprovincial standards for tradesmen. Tradesmen of one province are recognized as qualified tradesmen without further trade examinations in other provinces. As of September, 1963, some 1300 journeymen in six trades in Alberta had been awarded the Red Seal signifying inter-provincial certification.

The table below provides information about the apprentice training program and the certification of tradesmen in Alberta.

Table 52. LENGTH OF APPRENTICESHIP, EDUCATIONAL REQUIREMENTS AND TYPE OF CERTIFICATE GRANTED, BY TRADE  
ALBERTA - 1963

Tradesman	Length of Apprenticeship In Years	Technical Training In Weeks Per Year				Minimum Education	Voluntary Journeyman Certificate	Compulsory Journeyman Certificate	Interprovincial Red Seal
	Year								
	1st	2nd	3rd	4th					
Appliance Serviceman	4	(A)	(A)	(A)	(A)	10			
Auto Body Mechanic	4	5	5	5	4	9		x	
Baker	3	(A)	(A)	(A)	(A)	10			
Barber	2	(B)	(B)	(B)	(B)			x	
Beauty Culture Operator	1	(B)	(B)	(B)	(B)			x	
Bricklayer	4	8	8	0	8	8	x		
Carpenter	4	8	8	8	8	9	x		x
Communication Electrician	4	8	8	8	8	10			
Construction Electrician	4	8	8	8	8	10		x	x
Cook	3	8	8	8	-	8	x		
Gasfitter	3	3	0	3	-	9		x	
Heavy Duty Mechanic	4	6	6	6	6	9		x	x
Lather		(C)	(C)	(C)	(C)				
Machinist	4	8	8	8	8	9	x		
Millwright	4	(D)	(D)	(D)	(D)	9	x		
Motor Vehicle Mechanic	4	8	8	6	6	9		x	x
Painter and Decorator	3 1/2	4	8	8	-	9	x		
Plasterer	4	4	0	0	6	9	x		
Plumber	4	6	6	6	6	9		x	x
Power Electrician	4	8	8	8	8	10			
Radio-TV Technician	4	8	8	8	8	10		x	
Refrigeration Mechanic	4	8	8	8	8	9		x	
Sheet Metal Mechanic	4	9	8	5	8	9		x	x
Steamfitter	4	6	6	6	6	9		x	
Tile Setter	4	(A)	(A)	(A)	(A)	9			
Welder	3	6	6	4	-	9		x	

- (A) No Decision Reached As To Attainment Requirements (1963)
- (B) Training Is Provided By Private Schools
- (C) No Training Program At Present
- (D) Home Study Only

In 1961 and 1962 approximately \$50 million were spent in Alberta in building new publicly operated institutions for technical and vocational education.

A network of vocational and composite high schools in which vocational courses for high school students will be offered, has been established throughout the province.



The courses are designed to prepare students for further training or for direct entry into industry and business. In addition to the high schools, the Lethbridge Junior College offers, for adults, a selection of pre-employment courses. Information as to these schools may be secured from the Chief Superintendent, Department of Education, or directly from the schools concerned.

The Department of Agriculture operates agricultural and vocational schools at Olds, Vermilion and Fairview. The programs in these schools are designed to serve the needs of farm youth and the agricultural industry. Information as to courses is available from the Department of Agriculture.

The Southern Alberta Institute of Technology in Calgary, and the Northern Alberta Institute of Technology in Edmonton, offer a wide selection of technical courses. Particular emphases are given to apprenticeship training for the designated skilled trades, and to two-year post-high school programs for the preparation of technicians. Information as to curricula and costs may be secured from the Director of Vocational Education, Department of Education.

In addition to these a number of "approved" private and correspondence schools offer courses within the province.

The purposes of all of these schools are similar. They are intended to prepare the individual for gainful employment and to ensure to industry and business an adequate supply of well trained manpower. To achieve these objectives, educational authorities have benefitted from the co-operation of members of the business and industrial community who have provided advice and assistance in the designing and development of programs.



*The owner of this Calgary plant was the inventor of the 146 types of oil and fuel filters made here.*



LABOUR UNIONS:

Table 53 shows the number of local labour unions in Alberta and the membership reported. It should be noted that the membership figures are not exactly comparable from year to year as some of the union locals do not report regularly. However, the membership figures give some indication of union strength in the province.

Table 53. LOCAL UNIONS AND MEMBERSHIP REPORTED, ALBERTA, 1943-1962 (As Reported by Local Branch Unions)			
	Number of Union Branches in Alberta No.	Number of Union Branches Reporting Membership No.	Membership Reported No.
1943 .....	299	284	28,975
1944 .....	319	293	28,504
1945 .....	321	286	28,578
1946 .....	315	289	33,662
1947 .....	342	321	38,202
1948 .....	356	318	37,592
1949 .....	360	331	41,550
1950 * .....	-	-	-
1951 .....	365	325	42,750
1952 .....	373	337	44,450
1953 .....	369	333	48,111
1954 .....	378	337	51,000
1955 .....	411	362	52,500
1956 .....	426	388	57,608
1957 .....	425	373	66,297
1958 .....	414	384	62,289
1959 .....	416	376	67,400
1960 .....	390	350	60,000
1961 .....	404	367	60,500
1962 .....	401	365	60,400

\* For 1949 and previous years membership was reported as at December 31st of each year.  
After 1949 membership was reported as at January 1st of each year.

WAGE RATES:

The table below is a sampling of the 1963 wage rates in Alberta for the four major cities. Rates are shown for only a few job classifications but current wage rates for many job classifications are available from the Alberta Bureau of Statistics. Information on working conditions and benefits, and fringe benefit costs, by industry, may also be obtained on request.

Table 54. BUILDING AND CONSTRUCTION INDUSTRY HOURLY WAGE SCHEDULE, ALBERTA (As at December 5th, 1963)					
	Calgary and Zone \$	Edmonton and Zone \$	Lethbridge \$	Medicine Hat \$	Other Points \$
Boilermakers on construction or erection .....	3.20	3.20	3.20	3.20	3.20
Bricklayers and Stonemasons .....	3.10	3.00	2.80	2.95	2.70 (a)
Carpenters and Joiners .....	2.85	2.75	2.50	2.50	2.40
Cement Finishers .....	2.25	2.65	1.80	1.75	2.00
Compressor Operators .....	2.05	2.05	1.80	1.80	1.80
Concrete Mixer Operators .....	2.15	2.20	1.75	1.75	1.70
Drill Runners .....	2.15	2.15	1.70	1.50	1.45
Electricians (inside wiremen) .....	3.10	3.05	2.80	2.50	2.50 (b)
Elevator Constructors .....	2.99	3.00	2.99	2.99	2.99
Firemen (construction equipment) .....	2.05	2.10	1.80	1.80	1.80
Grader Operators .....	2.30	2.30	2.20	2.20	2.20
Holst Operators (tower) .....	2.20	2.20	1.80	1.80	1.80
Insulation Mechanics (heat and frost units) .....	2.65	2.75	2.65	2.65	2.65
Insulation Workers (general) .....	2.15	2.15	1.75	1.50	1.55
Labourers .....	2.05	2.05	1.65	1.40	1.40
Lathers (wood, wire, metal) .....	2.70	2.90+	2.50	2.25	2.40
Linoleum Layers .....	2.25	2.10	1.75	1.60	1.60
Oilers (construction equipment) .....	2.05	2.05	1.80	1.80	1.80
Operators (draglines, cranes, shovels, etc.) .....	2.60	2.60	2.50	2.50	2.50
Painters and Glaziers .....	-	-	2.05	2.00	2.00
Painters (spray) .....	2.55	2.55	2.15	2.20	2.10
Pipelayers, Caulkers and Solderers .....	2.15	2.10	1.75	1.50	1.50
Plasterers .....	2.90	2.95	2.60	2.25	2.55 (c)
Plumbers and Steamfitters .....	2.85	2.90	2.80	2.35	2.25 (d)
Riggers (general) .....	2.10	2.10	1.80	1.80	1.50
Roofers (reinforcing) .....	2.38	2.38	2.38	2.38	2.38
Roofers (built-up) .....	2.05	2.30	1.80	1.50	1.50
Sheet Metal Workers .....	2.85	2.95	2.75	2.25	2.25 (e)
Structural Steel Erectors .....	2.95	2.95	2.05	2.95	2.95
Timbermen and Cribmen .....	2.40	2.30	2.10	2.10	2.05
Tractor Operators (large) .....	2.30	2.30	2.20	2.20	2.20
Tractor Operators (small) .....	2.10	2.15	1.80	1.80	1.80
Truck Drivers .....	2.05	2.05	1.70	1.50	1.50
Watchmen .....	1.10	1.10	1.00	1.00	1.00
Welders and Burners (acetylene or electric) .....	2.25	2.25	2.15	2.15	2.15
Welders and Burners (steel erection) .....	2.05	2.05	2.95	2.95	2.95
(a) Red Deer - \$2.95 (c) Red Deer - \$2.70					
(b) Red Deer - \$2.75 (d) Red Deer - \$2.70					
+ Lathers (gyproc) - \$2.75 (e) Red Deer - \$2.70					

Source - Department of Labour - Canada. Building and Construction Fair Wage Schedules



The labour force includes all persons 15 years of age and over, who are employed, or unemployed and actively seeking work.

At June 1st, 1961\*, the Alberta labour force numbered 489,511, an increase of 135,613 for the ten year period 1951 to 1961. The comparable increase for the previous ten year period was 65,883. The labour force has shown a substantial increase numerically in the past 20 years; the shifts in employment have been even more noteworthy. The table below shows the numerical and percentage breakdown of the labour force for the census years 1911 to 1961.

Table 55. NUMERICAL AND PERCENTAGE DISTRIBUTION OF THE LABOUR FORCE

AGRICULTURAL, SERVICE & INDUSTRIAL SECTORS, ALBERTA 1911-1961

Year	Agriculture		Service		Industry		Total	
	No.	%	No.	%	No.	%	No.	%
1911	82,100	50.8	41,468	25.7	38,042	23.5	161,610	100.0
1921	114,874	53.2	65,707	30.4	35,424	16.4	216,005	100.0
1931	148,253	51.8	88,346	30.9	49,449	17.3	286,048	100.0
1941	145,173	50.4	96,887	33.6	45,955	16.0	288,015	100.0
1951	117,538	33.2	160,162	45.3	76,198	21.5	353,898	100.0
1961	109,196	22.3	278,308	56.9	102,007	20.8	489,511	100.0

Until the early 1940's, the agricultural group was the largest in the total labour force. During this period, opportunities for immigrants and other new entrants into the labour force were mainly agricultural. Until as recently as 1941, this held true. However, as World War II progressed, the number of agricultural workers declined steadily due to higher wages in industry and to the mechanization of the agricultural sector of the economy.

The first notable shifts in the composition of the Alberta labour force became evident during the ten year period 1941 to 1951. Agricultural employment decreased by almost 28,000; employment in the non-agricultural industry sector increased by over 30,000; and in the services sector by over 63,000.

(\*) Census of Canada 1961.

Employment shifts were even more pronounced during the decade 1951-1961. The numbers engaged in agriculture showed a further decline of over 8,000. The industrial and services sectors showed substantial gains in employment of 26,000 and 118,000 respectively.

These shifts in employment affecting the Alberta labour force follow a common historical pattern. As an area (province) becomes more industrialized, the proportion of the labour force engaged in agriculture tends to decline relative to the number engaged in industry. Later, the proportion engaged in the industry sector in turn declines relative to the number employed in the services sector.

Table 56. NUMERICAL CHANGES IN EMPLOYMENT - BY MAJOR INDUSTRIAL SECTORS,

ALBERTA, - FOR TEN YEAR PERIODS -- 1911-1961

	1911-1921	1921-1931	1931-1941	1941-1951	1951-1961
Agriculture (1)	+ 32,774	+ 33,379	- 3,080	- 27,635	- 8,342
Industry (2)	- 2,618	+ 14,025	- 3,494	+ 30,243	+ 25,809
Service (3)	+ 24,239	+ 22,639	+ 8,541	+ 63,275	+ 118,146
Total Increase in the Labour Force	54,395	70,043	1,967	65,883	135,613

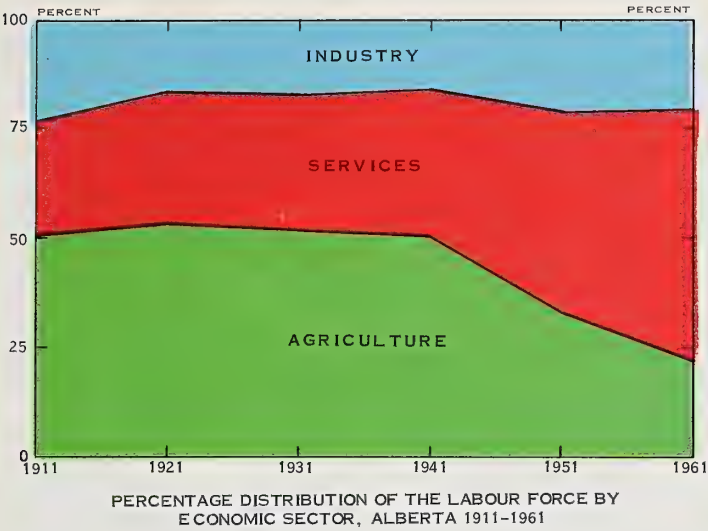
(1) Agriculture includes farmers and farm workers, hunters, fishermen and forestry workers.

(2) Industry comprises manufacturing, construction, mining and quarrying and utilities producing gas, water or generating electricity.

(3) Services comprises trade (wholesale and retail), finance, transportation storage and communication, public administration and personal and professional services.

The chart in the following paragraph depicts the proportions engaged in each of the three sectors for the years 1911 to 1961. As the chart shows, percentage changes in employment from 1921 to 1941 were negligible, with each major sector retaining almost the same percentage of the labour force during these years. However, between the years 1941 to 1961, the portion of the labour force engaged in agriculture has declined sharply, the portion in the industry sector has increased moderately and the portion in the service sector has increased sharply.





Another important development of recent years is the change in participation rates for both males and females. A participation rate is the proportion of a total population, of all or any age group, fifteen years of age and over that is either employed, or unemployed and actively seeking work. In the table below are shown the population, labour force and participation rates by sex for the various age groups, 1951 and 1961.

Significantly, participation rates of all male age groups are lower in 1961

than in 1951. Decreases were most pronounced in the age groups 15 to 19, 20 to 24, and 65 plus. Probably the increased emphasis of employers on the educational qualifications of their employees has been the chief factor in deterring many in the younger age groups from entering the labour force until such time as they have acquired adequate skills. Another factor is the realization that higher incomes can be obtained only through better training and education.

Table 57. POPULATION, PARTICIPATION RATES AND LABOUR FORCE BY AGE GROUPS, AND SEX  
ALBERTA - 1951-1961

Age Groups	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
1951								
	Male							
Population	37,882	38,333	74,053	64,370	51,657	41,225	38,727	346,247
Participation Rate %	54.27	94.28	97.12	97.15	95.24	86.45	39.15	84.09
No. in Labour Force	20,559	36,142	71,924	62,538	49,201	35,643	15,162	291,169
1961								
	Male							
Population	50,296	44,403	100,414	87,593	67,212	48,052	50,850	448,820
Participation Rate %	45.99	90.79	95.53	95.84	93.83	84.05	29.81	80.64
No. in Labour Force	23,135	40,317	95,931	83,957	63,071	40,389	15,161	361,961
1951								
	Female							
Population	36,059	37,194	74,613	59,110	40,823	30,433	28,216	306,448
Participation Rate %	28.28	42.69	20.06	17.77	15.79	11.63	4.25	20.47
No. in Labour Force	10,201	15,881	14,968	10,509	6,448	3,542	1,202	62,751
1961								
	Female							
Population	48,708	44,751	92,157	85,030	61,335	39,591	42,228	413,800
Participation Rate %	30.31	46.81	30.00	34.42	36.99	25.35	5.17	30.82
No. in Labour Force	14,765	20,948	27,651	29,274	22,690	10,037	2,185	127,550

In the older male age groups, the decreased participation rates appear to be the result of several different factors. Many older workers have found their skills inadequate or almost obsolete. The possibility of retraining is not encouraging due partly to the fact that many do not have adequate educational qualifications. This, combined with the strong competition for available jobs from the younger and better trained members of the labour force tends to drive many older men out of the labour force.

All age groups of the female labour force show higher participation rates in 1961 than ten years earlier. With the significant increase in the service sector of the economy, many more job opportunities became available to females. Many of the new jobs available in the services sector were more suitable to females than those to be found in the agriculture or industry sectors.

The three groups of females achieving the highest changes in participation rates were those covering ages 35 to 64. Large numbers in these groups were married women who had previously been in the labour force. With increased numbers of job opportunities awaiting them, females of these groups found re-entry into the labour force comparatively easy.

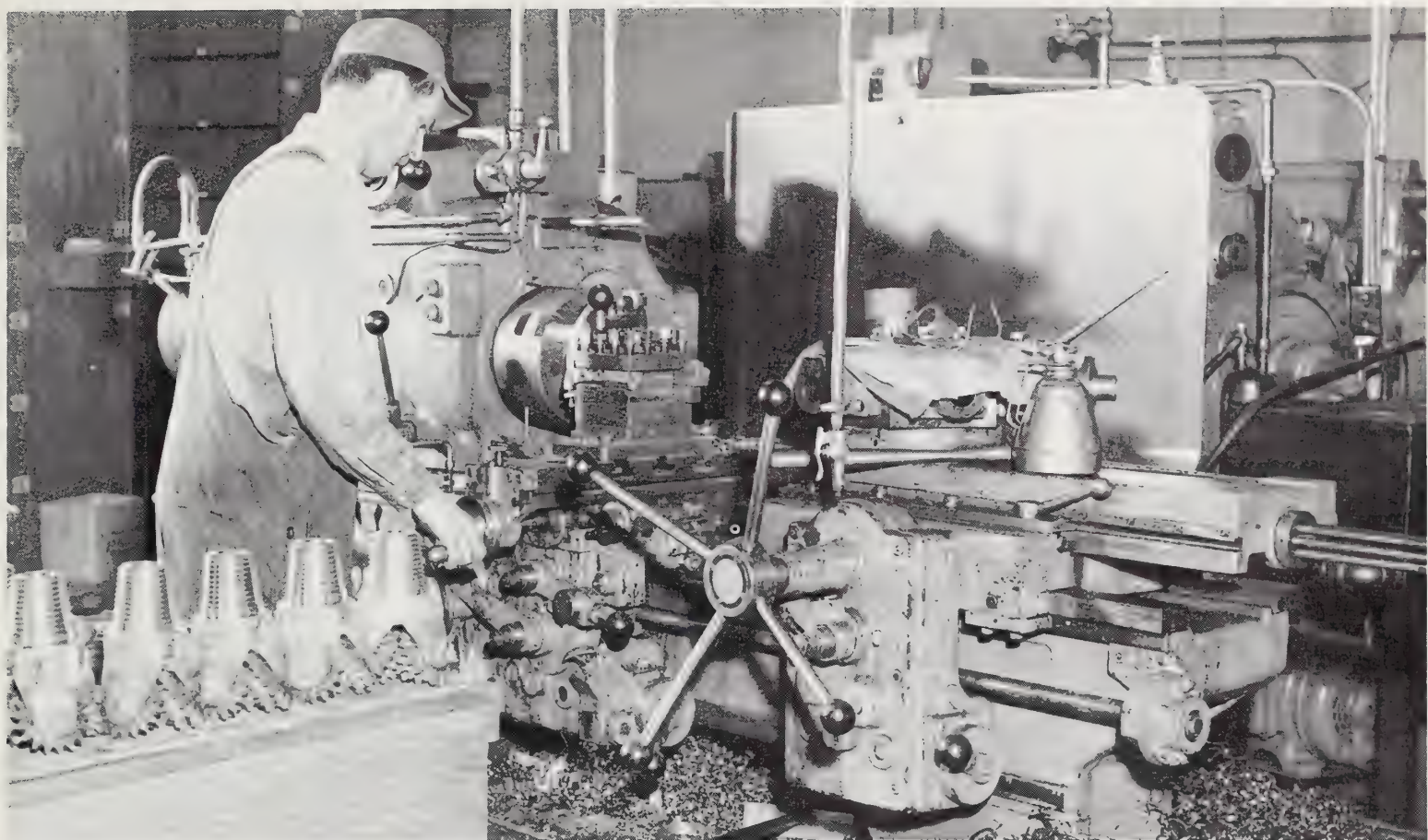
Alberta's industrialization since 1940 has been largely responsible for the changed labour force employment pattern. However, with Alberta's economy expanding during this period, the members of the labour force affected by these shifts have experienced little difficulty in obtaining employment. Unemployment has been consistently lower than the national average.

New industries establishing in Alberta have found capable workers to staff their plants. The well established Apprenticeship Programme and Technical and Vocational Training Schools have ensured a continuing supply of skilled workers. Under the Federal-Provincial Technical and Vocational Training Agreement, additional emphasis is now being placed on the training of even greater numbers.



*Symbolic of Alberta's many modern technical training centres, the Northern Alberta Institute of Technology in Edmonton, is the largest and most up-to-date in the country.*





*Metal parts and equipment formerly imported are now manufactured in Alberta for the petroleum industry.*



*The plastic industry is an off-shoot of the petroleum industry, and plastic tubing is manufactured in many different diameters.*



## PERSONAL INCOME

Personal income is one of the economic indicators referred to frequently as a guide to economic activity in region or province. Because personal income data have been compiled on a provincial basis for more than a quarter of a century, they are **useful** in making historical inter-provincial comparisons, or in tracing the pattern of development in a particular province.

On occasion the concept of "personal income" is misinterpreted and thought of as including only salaries and wages received by individuals. Actually it includes all current receipts of wages, salaries, commissions and other labour income such as free room and board; transfer payments such as family allowances or old age pensions; military pay allowances, and a negative item, employer and employee contributions to **social** insurance and government pension funds. Undistributed corporation profits and profits of government operated enterprises are excluded from personal income.

For different purposes it is useful to examine total personal income, its components and per capital personal income.

**Total personal income** figures are valuable indicators of aggregate economic activity. Moreover since the series has been compiled on a standard basis over a period of time it reflects changes in the pace of economic progress in a province or in a nation.

The Alberta total personal income series shows almost uninterrupted growth, tripling in the past twenty years and almost doubling in the past decade. From 1952 to **1962** total personal income rose from \$ 1,328,000,000 to \$ 2,311,000,000. This gain represents a cumulative annual increase of 6%, which is almost double the rate of population growth. While part of the increase in the total stems from price increases which inflate the series, the fact remains that in real terms personal income has been rising faster than population. This indicates higher levels of real personal income and a rising standard of living for Albertans.

The above mentioned statement is made with the knowledge that in **addition** to personal income climbing steadily there has been a trend towards a broader income distribution. The components of personal income show how during the past ten years the economy of the Province of Alberta has changed. Wages, salaries and supplementary labour income have more than doubled, rising from \$ 643,000,000 in 1952 to \$ 1,374,000,000 in 1962. Over the same period the five year average of net income received by farm operators from farm production declined from \$ 298,000,000 to \$ 231,000,000. These major changes are depicted on the chart opposite.

What has happened since 1952, is that increased activity in the manufacturing, construction and mining sectors of the economy have stimulated economic activity to the extent that despite the decline in personal income receipts of farmers, total personal income has risen. The effects of the fluctuations in annual returns to agriculture, which have been characteristic of this industry in the past, have to a considerable extent been ameliorated by more persons being dependent on other industries for their income.

Not only have returns from wages, salaries and supplementary income gained markedly, but personal income receipts of operators of non-farm unincorporated businesses and recipients of interest, dividends and net rental income have also almost doubled since 1952. This development has been a corollary to industrialization and population growth.

Since 1952 Alberta's labour force increased by 136,000 persons or 38%. At the same time the number of persons employed in agriculture fell by 11,000 persons. The net effect was that in the ten year period 147,000 additional jobs were needed. The dynamic industrial expansion which characterized the Alberta economy generated the employment opportunities to provide the necessary employment.



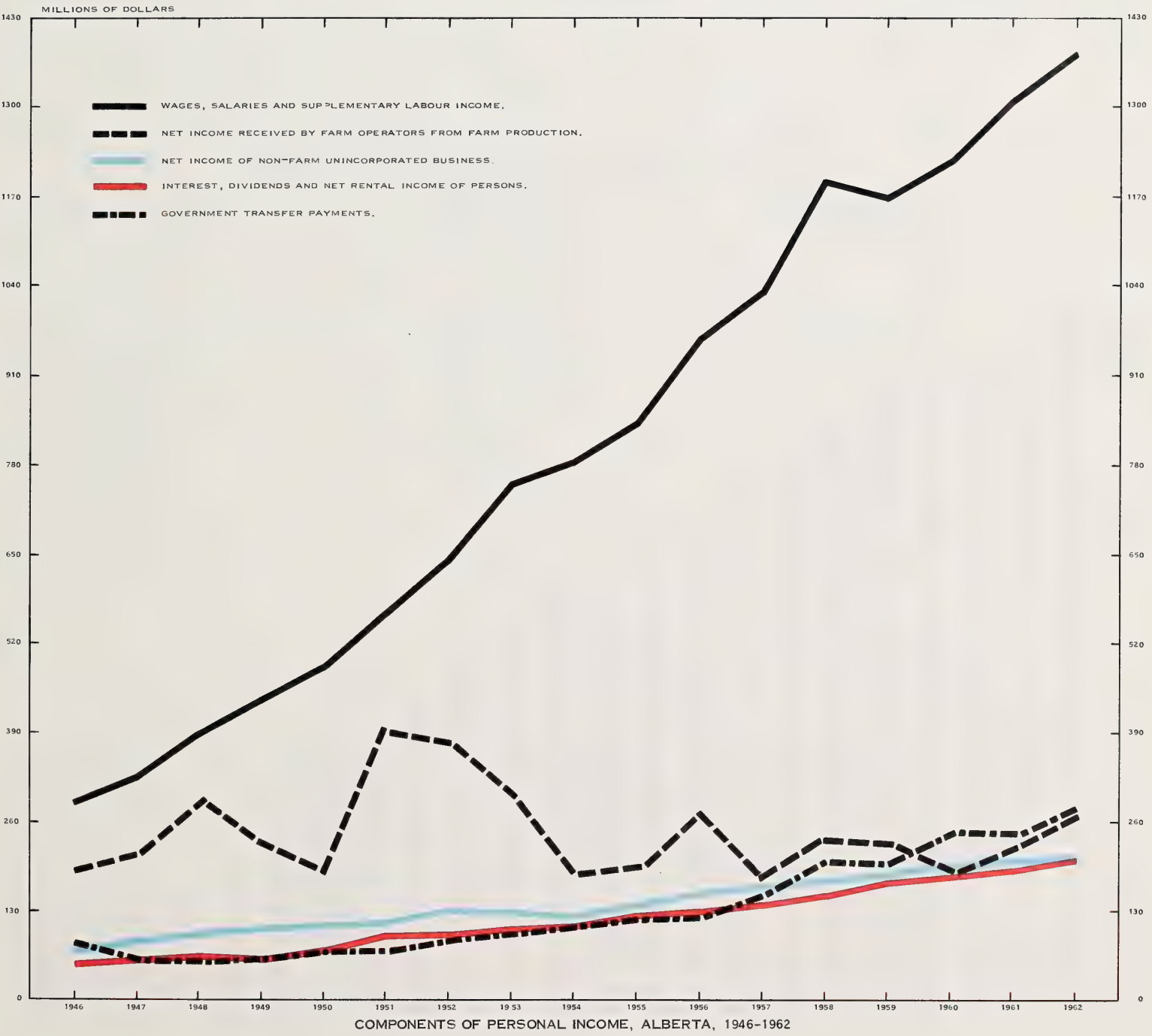
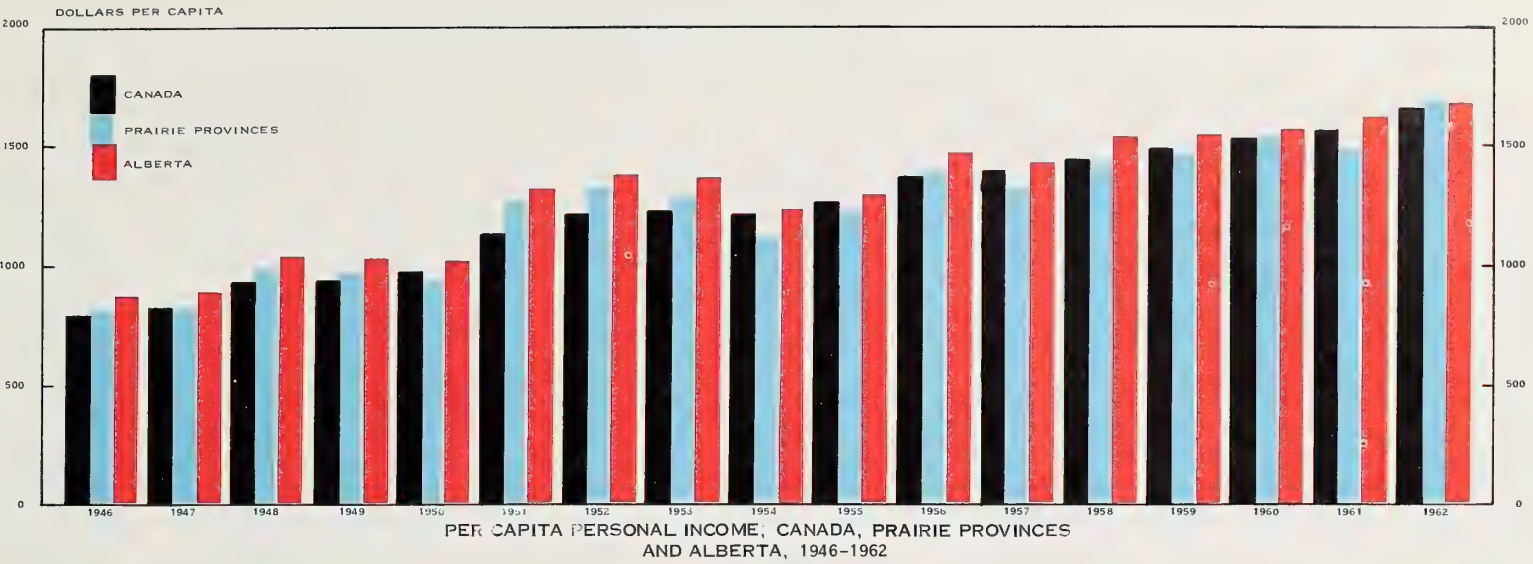


Table 58. TOTAL PERSONAL INCOME AND PER CAPITA PERSONAL INCOME  
CANADA, PRAIRIE PROVINCES AND ALBERTA, 1951 - 1962

Year	TOTAL PERSONAL INCOME			PER CAPITA PERSONAL INCOME		
	Canada \$	Prairie Provinces \$	Alberta \$	Canada \$	Prairie Provinces \$	Alberta \$
1951	15,824,000,000	3,215,000,000	1,228,000,000	1,130	1,262	1,308
1952	17,395,000,000	3,471,000,000	1,328,000,000	1,203	1,328	1,365
1953	18,336,000,000	3,452,000,000	1,373,000,000	1,235	1,287	1,357
1954	18,421,000,000	3,045,000,000	1,309,000,000	1,205	1,106	1,238
1955	19,738,000,000	3,431,000,000	1,410,000,000	1,257	1,222	1,292
1956	21,885,000,000	3,987,000,000	1,635,000,000	1,361	1,397	1,456
1957	23,191,000,000	3,811,000,000	1,660,000,000	1,396	1,311	1,426
1958	24,675,000,000	4,219,000,000	1,850,000,000	1,445	1,420	1,534
1959	26,036,000,000	4,437,000,000	1,932,000,000	1,489	1,457	1,548
1960	27,411,000,000	4,760,000,000	2,007,000,000	1,534	1,530	1,555
1961	28,506,000,000	4,693,000,000	2,142,000,000	1,563	1,476	1,608
1962	30,794,000,000	5,469,000,000	2,311,000,000	1,658	1,691	1,687

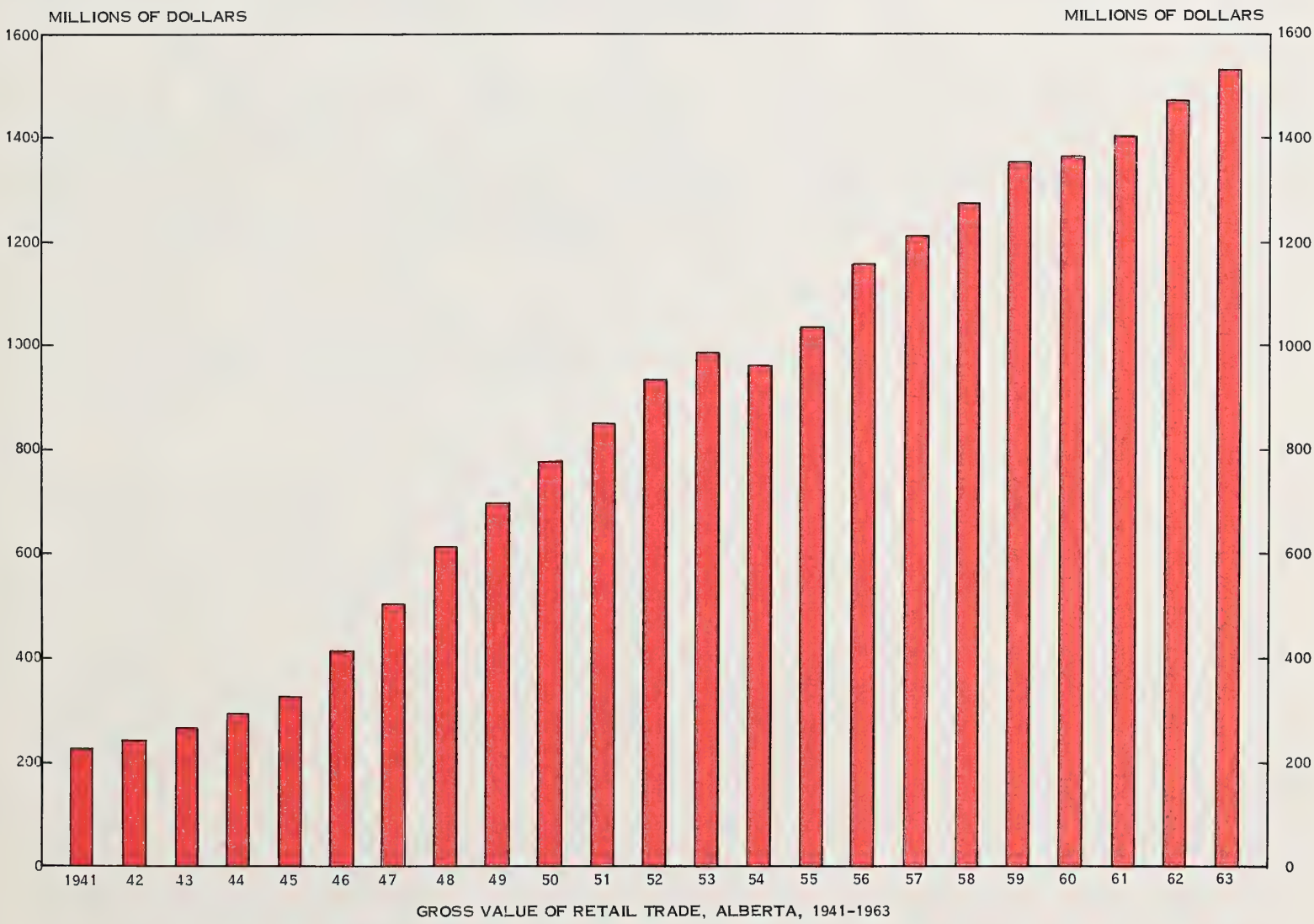
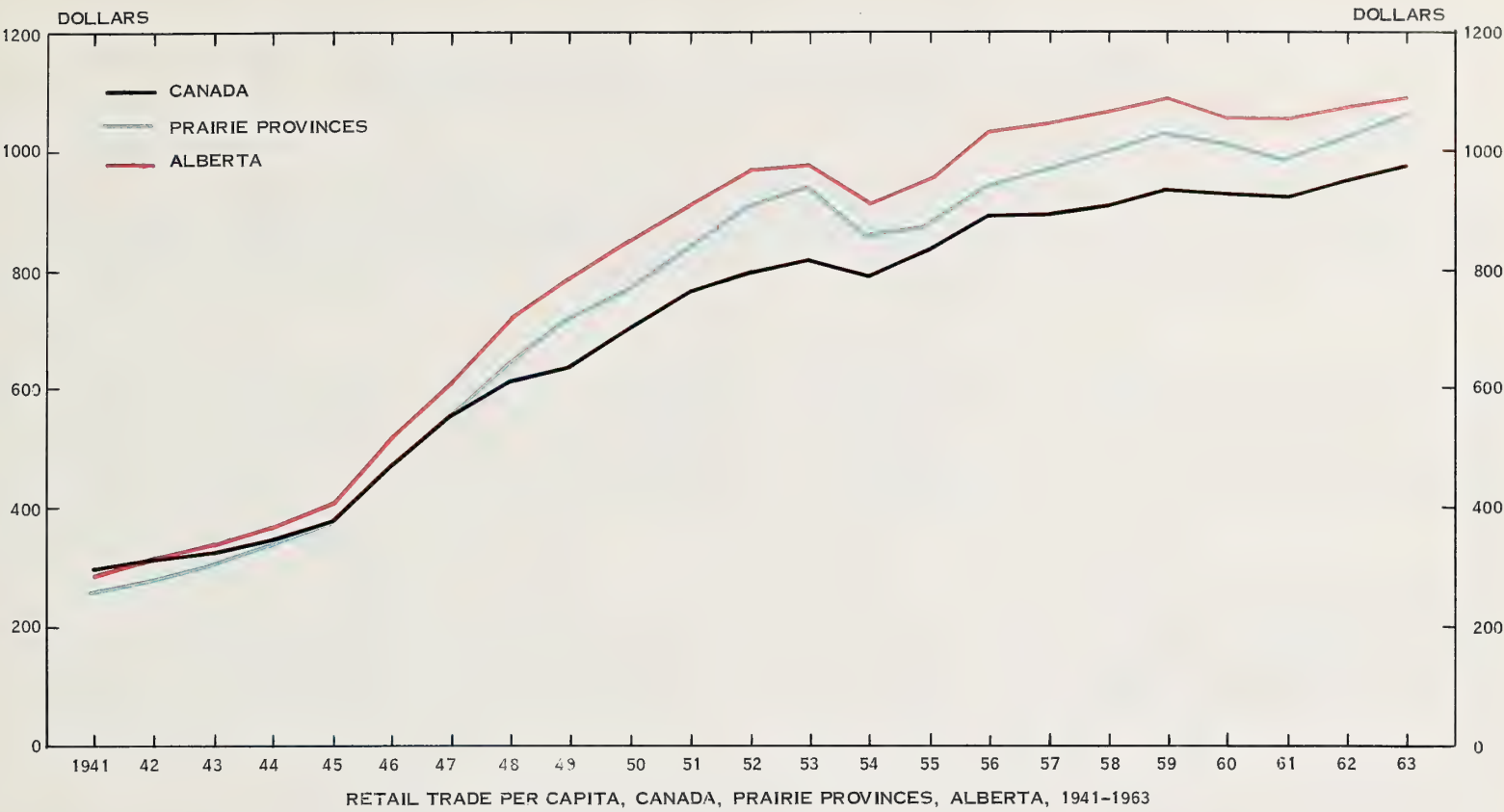
Table 59. COMPONENTS OF PERSONAL INCOME - ALBERTA, 1951-1962

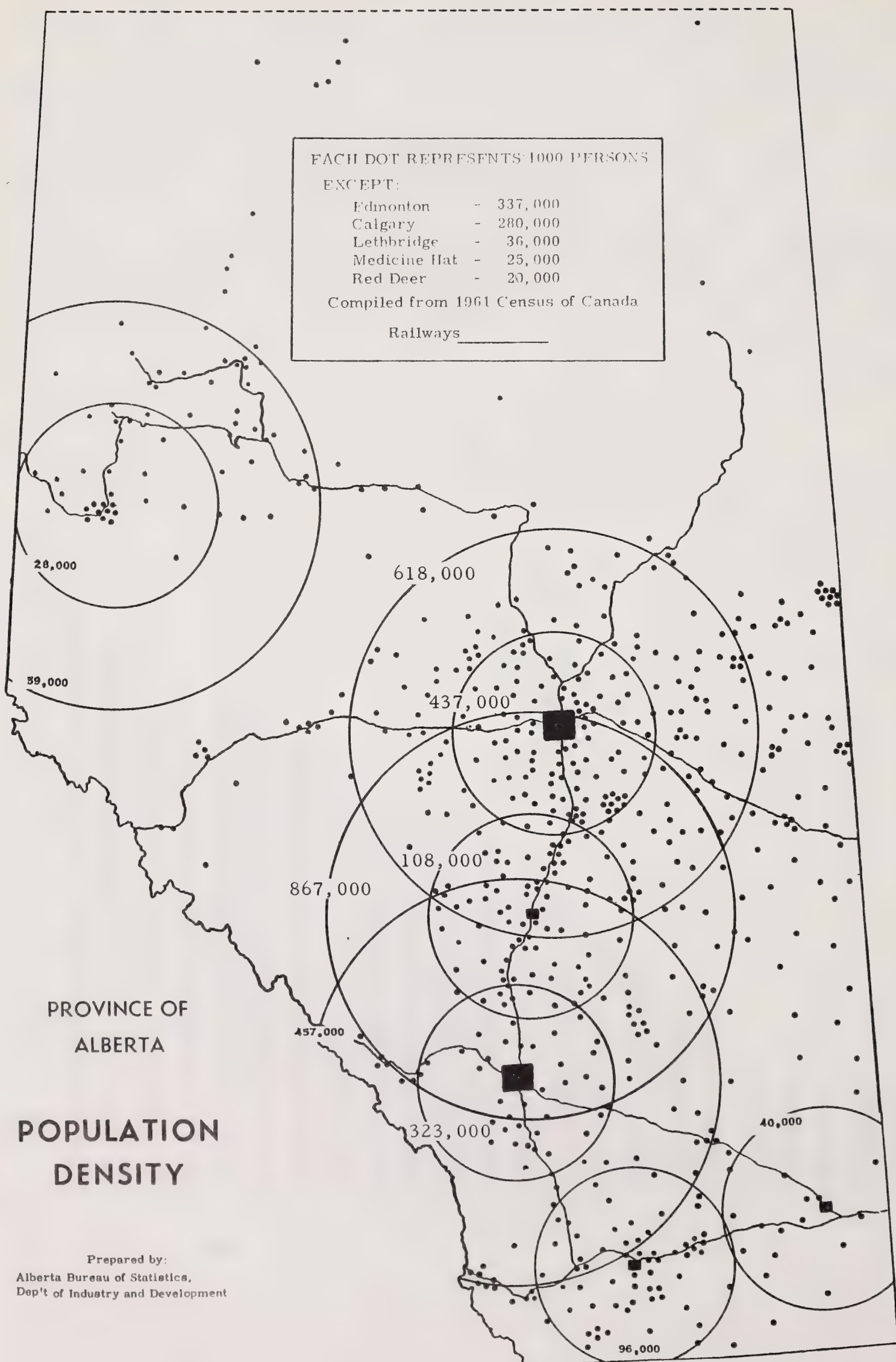
Year	Wages, Salaries and Supplementary Labour Income \$	Net Income Re- ceived by Farm Operators from Farm Production \$	Net Income of Non- Farm Unincorporated Business \$
1951	562,000,000	398,000,000	108,000,000
1952	643,000,000	381,000,000	129,000,000
1953	751,000,000	300,000,000	127,000,000
1954	784,000,000	190,000,000	118,000,000
1955	839,000,000	197,000,000	135,000,000
1956	961,000,000	273,000,000	155,000,000
1957	1,029,000,000	181,000,000	162,000,000
1958	1,091,000,000	237,000,000	176,000,000
1959	1,167,000,000	228,000,000	181,000,000
1960	1,221,000,000	192,000,000	194,000,000
1961	1,304,000,000	226,000,000	200,000,000
1962	1,374,000,000	270,000,000	207,000,000

Year	Interest Dividends and Net Rental In- come of Persons \$	Government Transfer Payments \$	Adjustments \$	Total \$
1951	93,000,000	71,000,000	- 4,000,000	1,228,000,000
1952	94,000,000	85,000,000	- 4,000,000	1,328,000,000
1953	103,000,000	95,000,000	- 3,000,000	1,373,000,000
1954	107,000,000	109,000,000	1,000,000	1,309,000,000
1955	122,000,000	118,000,000	- 1,000,000	1,410,000,000
1956	129,000,000	121,000,000	- 4,000,000	1,635,000,000
1957	137,000,000	152,000,000	- 1,000,000	1,660,000,000
1958	149,000,000	203,000,000	- 6,000,000	1,850,000,000
1959	171,000,000	199,000,000	- 14,000,000	1,932,000,000
1960	178,000,000	241,000,000	- 19,000,000	2,007,000,000
1961	188,000,000	244,000,000	- 20,000,000	2,142,000,000
1962	202,000,000	279,000,000	- 21,000,000	2,311,000,000









## CONSUMER MARKET DATA

Alberta has the distinction of having the highest rate of population increase in Canada. Since 1951 the population of the province has increased at an average rate of 3.5 per cent per annum compared with an average rate of 2.6 per cent for the nation as a whole.

Being situated as it is, in the centre of the western Canadian market, Alberta occupies a favoured position as a supply centre. Approximately 34 per cent of the 5 million persons who live in western Canada reside in British Columbia, while 38 per cent reside in Saskatchewan and Manitoba. Alberta is ideally placed to supply this growing market area.

Alberta's population in 1963 totalled 1,405,000 persons, up 466,000 or 50 per cent from the 1951 figure of 939,000. Almost two thirds of all Albertans are urban dwellers. Since 1951 all of the growth in the population of the province has been concentrated in the urban centres with the rural population declining slightly.

Of the urban group which numbers approximately 900,000 persons, 780,000 live in Alberta's ten cities and are thus well distributed throughout the province. Edmonton and Calgary together account for 85 per cent of the city population. The population map opposite illustrates how the population of Alberta is distributed.

Rapid economic development is characterized by high levels of income and low rates of unemployment. Alberta in this respect has been no exception. Personal disposable income of Albertans almost doubled during the past decade, totalling \$ 2.1 billion in 1962. Labour income has risen from \$ 648 million in 1952 to \$ 1.4 billion in 1962, a gain of 112 per cent.

Population expansion and buoyant incomes result in an increased tempo of business activity. Bank debits and life insurance, new residential construction, retail sales, and motor vehicle registrations all are directly affected by the income position of individuals and their attitudes towards their security and future prosperity.

In each of the last 10 years there has been an increase in the total volume of bank debits. By 1962 this total had almost reached the \$ 20 billion mark, more than twice the 1952 figure of \$ 7.9 billion. Calgary has preserved its position of being the financial centre in Alberta, with 58 per cent of total bank debits. Head office operations of grain, financial and oil firms account for Calgary's preeminent position.

On a per capita basis Canadians are reputed to be the world's major purchasers of life insurance. Albertans appear to be no exception with purchases of \$ 325,000,000 for life insurance being made in 1962. In 1955, life insurance sales amounted to \$ 194,000,000.

The expansion of the major urban centres in the past decade has been accompanied by expansion of retail, wholesale and service plants. The merchandising and service sector of the economy has proven to be an important employer, providing employment for an additional 23,000 persons in the past 10 years, an increase of 30 per cent.

Sales of retail establishments totalled \$1,471 million in 1962. This figure

was 57 per cent higher than the 1952 sales figure of \$ 939 million. Some of this increase is attributable to higher prices. If the retail trade figures are deflated by use of the consumer price index series for Edmonton-Calgary (1949 = 100) the increase may be measured in "real terms". By this calculation real retail sales have increased at almost the same rate as population growth, which amounted to 41 per cent during the period 1952-1962. It is significant that in spite of inflationary pressures, real incomes have more than kept pace.

The concentration of population growth in urban centres has resulted in a spacial alteration in the location of retail and service trade establishments. As housing developments have been extended into areas at greater distances from the centres of urban communities the establishment of local shopping centres has followed. Located in proximity to the housing developments these shopping centres vary in size from those containing a few shops to large agglomerations of almost all types of retail and service establishments. The ample parking facilities which are provided at the centres have been an important factor in the popularity and success of shopping centre operations. With a rising ratio of passenger cars per family and the "two car family" becoming fairly commonplace this trend may be expected to continue.

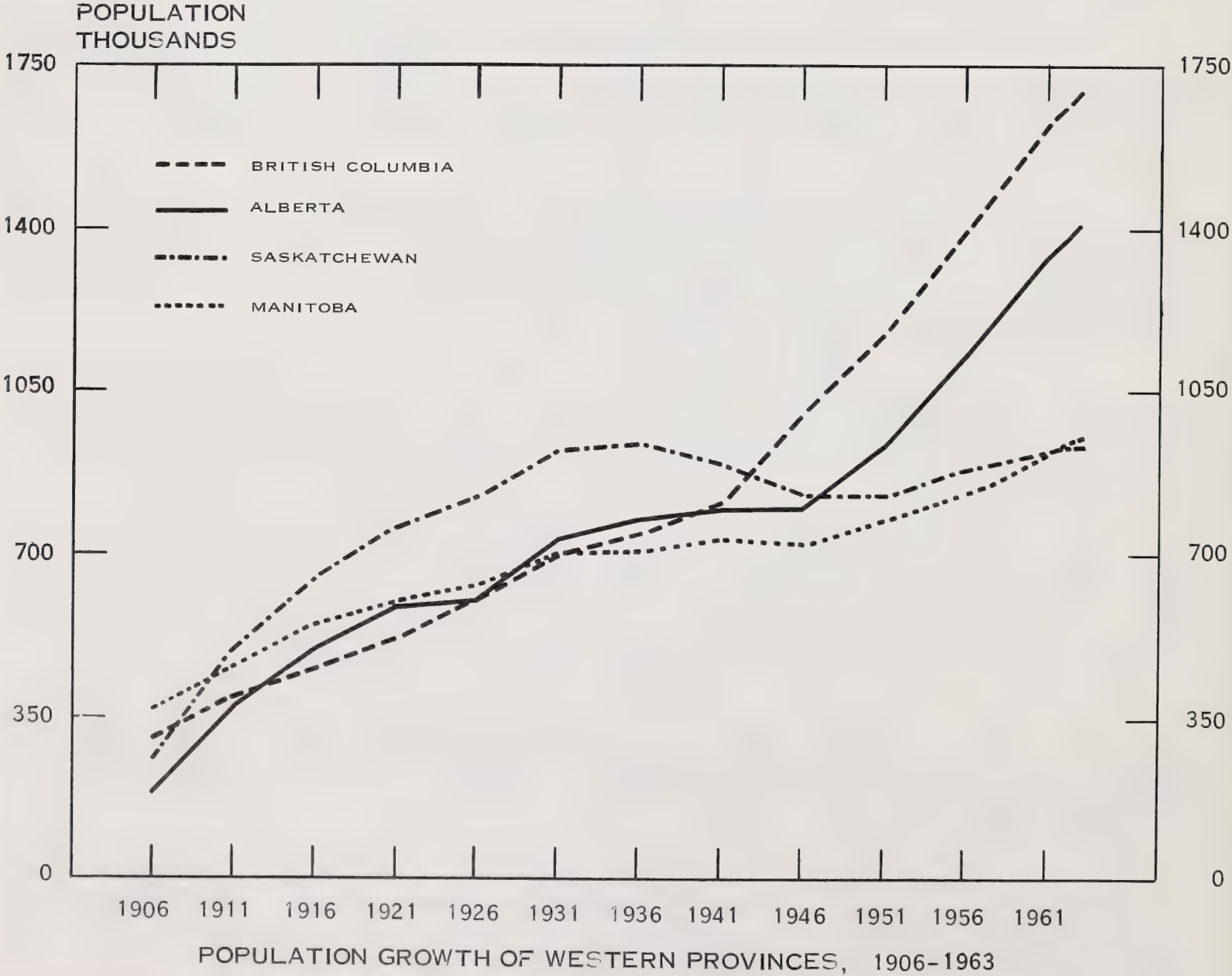




Table 60. RETAIL TRADE - ALBERTA, SPECIFIED YEARS 1947-1963

Sales - Distribution By Groups	<u>1947</u>	<u>1948</u>	<u>1950</u>	<u>1952</u>	<u>1954</u>	<u>1956</u>	<u>1958</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Grocery and Combination Stores	68,716	78,676	102,188	130,900	139,756	163,084	207,818	240,811	253,000	263,857	276,000
Per Cent of Total	13.6	12.9	13.2	13.9	14.5	14.1	16.3	17.6	18.1	17.9	18.0
Other Food and Beverage Stores	*	*	*	*	59,538	64,282	59,666	69,717	69,191	74,041	77,000
Per Cent of Total	*	*	*	*	6.2	5.5	4.7	5.1	4.9	5.0	5.0
General Stores	49,246	56,293	58,156	60,969	56,151	56,534	62,463	63,163	66,620	71,940	76,000
Per Cent of Total	9.8	9.2	7.5	6.5	5.8	4.9	4.9	4.6	4.7	4.9	5.0
Department Stores	57,931	69,413	80,310	96,319	103,046	127,758	152,798	161,579	168,126	176,849	185,000
Per Cent of Total	11.5	11.3	10.3	10.3	10.7	11.0	12.0	11.8	12.0	12.0	12.1
Variety Stores	6,327	7,406	8,843	11,432	12,564	15,034	16,712	19,341	21,311	22,496	24,000
Per Cent of Total	1.3	1.2	1.1	1.2	1.3	1.3	1.3	1.4	1.5	1.5	1.6
Motor Vehicle Dealers	68,245	81,175	129,966	210,155	182,023	239,954	233,677	236,760	238,428	263,486	279,000
Per Cent of Total	13.5	13.3	16.8	22.4	18.9	20.7	18.3	17.3	17.0	17.9	18.2
Garages and Filling Stations	30,236	33,705	36,765	48,770	62,823	73,595	81,933	92,866	99,637	99,094	98,000
Per Cent of Total	6.0	5.5	4.8	5.2	6.5	6.4	6.4	6.8	7.1	6.7	6.4
Men's Clothing Stores	9,040	8,566	9,109	15,720	15,708	22,633	22,857	24,260	21,712	21,724	22,000
Per Cent of Total	1.8	1.4	1.2	1.7	1.6	2.0	1.8	1.8	1.6	1.5	1.4
Family Clothing Stores	8,896	10,007	11,950	12,036	11,676	13,711	13,293	12,567	13,338	13,840	14,000
Per Cent of Total	1.8	1.6	1.5	1.3	1.2	1.2	1.0	0.9	0.9	0.9	0.9
Women's Clothing Store	8,618	10,861	11,854	15,971	20,737	21,269	23,700	23,898	23,171	22,934	24,000
Per Cent of Total	1.7	1.8	1.5	1.7	2.2	1.8	1.9	1.8	1.7	1.6	1.6
Shoe Stores	2,558	2,922	4,124	5,290	5,144	7,426	7,410	9,650	9,368	9,570	10,000
Per Cent of Total	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.7	0.7	0.7	0.7
Hardware Stores	20,142	24,199	29,104	27,247	26,570	37,147	43,079	43,824	42,672	43,890	45,000
Per Cent of Total	4.0	3.9	3.7	2.9	2.7	3.2	3.4	3.2	3.0	3.0	2.9
Lumber and Building Material Dealers	28,954	34,030	43,853	51,571	53,152	60,532	57,542	62,505	65,292	75,747	78,000
Per Cent of Total	5.7	5.6	5.7	5.5	5.5	5.2	4.5	4.6	4.7	5.1	5.1
Furniture Appliances Radio Stores	16,040	16,436	22,607	28,536	32,440	40,182	50,252	43,350	37,495	38,149	40,000
Per Cent of Total	3.2	2.7	2.9	3.0	3.4	3.5	3.9	3.2	2.7	2.6	2.6
Restaurants	27,168	29,801	35,118	40,604	36,319	41,478	45,437	46,042	46,187	45,178	45,000
Per Cent of Total	5.4	4.9	4.5	4.3	3.8	3.6	3.6	3.4	3.3	3.1	3.0
Fuel Oil Dealers	2,783	1,896	1,322	834	523	786	2,544	2,681	3,242	2,965	3,000
Per Cent of Total	0.5	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Drug Stores	12,339	13,414	15,645	19,685	21,282	25,499	30,538	30,004	30,476	31,773	33,000
Per Cent of Total	2.4	2.2	2.2	2.1	2.2	2.2	2.4	2.2	2.2	2.2	2.2
Jewellery Stores	3,812	3,854	5,564	7,927	5,873	7,432	7,788	8,091	8,033	8,341	9,000
Per Cent of Total	0.8	0.6	0.7	0.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Per Cent of Total	83,255	128,840	170,214	155,123	118,304	140,624	155,304	175,364	183,456	184,769	192,000
Per Cent of Total	16.5	21.1	21.9	16.5	12.3	12.1	12.2	12.8	13.1	12.6	12.5
	504,306	611,494	776,692	939,089	963,630	1,158,960	1,274,812	1,366,472	1,400,756	1,470,643	1,530,000

Table 61. NUMBER OF INCOME TAXPAYERS, AVERAGE INCOME AND TOTAL INCOME  
FOR ALBERTA CITIES HAVING MORE THAN 5,000 TAXPAYERS

1950 - 1961

Year	Place of Residence	Position* In Order of Average Income	Number of Taxpayers	Average Income	Total Income Reported
			No.	\$	\$'000, 000
1950	Calgary	10	40,290	3,046	122.7
	Edmonton	29	46,800	2,874	134.5
	Lethbridge	1	6,240	3,312	20.7
1951	Calgary	8	45,780	3,283	150.3
	Edmonton	24	55,080	3,102	170.8
	Lethbridge	9	6,490	3,271	21.2
1952	Calgary	11	52,590	3,421	179.9
	Edmonton	28	66,270	3,243	215.0
	Lethbridge	13	8,250	3,390	28.0
1953	Calgary	7	58,990	3,563	210.2
	Edmonton	24	74,290	3,369	250.3
	Lethbridge	28	8,350	3,322	27.7
	Medicine Hat	45	5,110	3,186	16.3
1954	Calgary	7	61,090	3,633	222.0
	Edmonton	28	77,450	3,418	264.7
	Lethbridge	15	8,850	3,506	31.0
1955	Calgary	6	63,810	3,819	243.7
	Edmonton	28	84,000	3,539	297.3
	Lethbridge	48	9,090	3,355	30.5
	Medicine Hat	37	5,090	3,433	17.5
1956	Calgary	9	69,514	3,913	272.0
	Edmonton	26	91,081	3,751	341.7
	Lethbridge	37	9,368	3,584	33.6
	Medicine Hat	55	6,011	3,464	20.8
1957	Calgary	9	75,082	4,118	309.2
	Edmonton	27	95,524	3,876	370.3
	Lethbridge	39	10,249	3,751	38.4
	Medicine Hat	60	6,594	3,463	22.8
1958	Calgary	5	79,083	4,286	339.1
	Edmonton	27	96,215	4,031	387.9
	Lethbridge	47	10,573	3,872	40.9
	Medicine Hat	58	5,942	3,777	22.4
1959	Calgary	3	82,236	4,525	372.1
	Edmonton	16	95,499	4,223	403.3
	Lethbridge	27	10,732	4,076	43.7
	Medicine Hat	54	6,787	3,757	25.5
1960	Calgary	7	83,907	4,557	382.4
	Edmonton	31	97,257	4,202	408.7
	Lethbridge	26	10,933	4,248	46.4
	Medicine Hat	53	7,496	3,898	29.2
1961	Calgary	9	87,282	4,623	403.5
	Edmonton	25	107,559	4,352	468.1
	Lethbridge	39	10,940	4,223	46.2
	Medicine Hat	49	6,367	4,075	25.9

\* Indicates rating of specified Alberta cities compared with other Canadian cities, e.g. in 1950 Lethbridge taxpayers had the highest average income in Canada.



Table 62. AVERAGE INCOME OF TAXABLE PERSONS, BY OCCUPATIONAL CLASSES  
ALBERTA\* -- 1950-1961

OCCUPATION	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Farmers	4,251	3,882	4,135	3,876	3,296	3,523	3,775	3,952	4,396	4,487	4,309	4,391
Fishermen	-	-	-	-	-	-	3,864	-	-	-	-	-
Farmers and Fishermen	4,251	3,881	4,135	3,876	3,296	3,523	3,775	3,952	4,396	4,487	4,309	4,391
Accountants	-	3,817	7,090	6,625	6,752	6,876	8,685	10,763	8,787	8,927	11,494	11,293
Medical Doctors and Surgeons	11,679	12,014	12,984	11,746	11,986	12,905	12,063	15,216	16,073	17,900	18,146	18,466
Dentists	7,236	6,115	7,670	8,360	9,327	9,142	11,905	11,490	11,526	12,238	13,038	14,527
Lawyers and Notaries	7,965	9,658	9,170	10,475	10,968	11,150	11,371	11,126	13,890	12,073	14,622	14,992
Consulting Engineers and Architects	13,860	10,170	9,770	-	-	11,142	11,027	11,490	12,017	11,117	10,000	13,218
Entertainers and Artists	-	-	-	-	-	-	-	-	-	2,955	3,280	6,000
Nurses	1,350	1,670	1,720	-	2,283	2,225	1,840	1,906	1,350	2,333	-	-
Other Professional	3,300	4,745	3,867	-	6,470	5,267	6,340	7,577	6,117	8,186	7,055	7,840
Average for above Classes	8,967	8,487	8,765	8,901	9,498	9,005	9,972	11,285	11,907	12,255	13,422	14,274
Agricultural Enterprises	1,732	1,675	1,831	2,003	2,027	1,913	1,870	1,892	2,092	-	-	-
Business Enterprises	2,619	2,919	3,017	3,172	3,207	3,369	3,526	3,710	3,875	4,010	4,091	4,195
Institutions	2,029	1,975	2,134	2,261	2,227	2,272	2,402	2,643	2,596	2,622	2,809	2,949
Educational Institutions	2,614	2,721	2,894	3,142	3,186	3,405	3,453	3,833	4,134	4,213	4,622	4,841
Federal Government	2,494	2,743	2,936	2,868	3,030	3,099	3,138	3,460	3,468	3,724	3,858	4,180
Provincial Government	2,432	2,492	2,619	2,618	2,872	2,887	3,099	3,221	3,488	3,634	3,902	3,914
Municipal and Smaller Governments	2,602	2,612	2,833	2,956	3,043	3,238	3,329	3,448	3,751	3,964	4,129	4,026
Unclassified	2,236	2,742	-	2,255	2,530	2,627	2,962	2,962	2,798	-	2,628	2,770
Average for above Classes	2,586	-	-	3,088	3,140	3,275	3,431	3,619	3,750	3,921	3,989	4,107
Salesmen	4,414	4,549	4,463	5,062	4,511	4,807	5,155	5,038	5,032	5,417	5,144	5,369
Forestry	-	-	-	-	-	-	-	3,714	4,177	5,733	4,636	3,112
Manufacturing	**	**	**	5,884	5,158	5,972	6,154	5,661	6,667	6,556	6,761	5,950
Construction	**	**	**	5,348	4,841	5,373	5,476	5,585	5,364	5,148	5,100	4,688
Public Utilities	**	**	**	3,600	3,320	3,529	4,154	3,845	4,116	4,213	4,175	4,030
Wholesale Trade	**	**	**	6,585	6,947	7,490	9,326	8,949	7,679	7,892	6,904	6,167
Retail Trade	**	**	**	5,282	5,174	5,133	5,589	5,439	5,904	5,897	5,194	5,227
Service	**	**	**	4,410	3,724	3,925	4,046	4,159	4,419	4,293		
Recreation Services											5,745	3,783
Business Services											4,239	4,691
Other Services											4,074	4,145
Finance	**	**	**	7,241	6,659	9,074	6,933	7,739	8,444	7,231		
Insurance Agencies											6,333	6,128
Real Estate											6,978	5,641
Other Finance											14,500	10,017
Unclassified	**	**	**	5,053	5,523	5,623	7,776	5,045	14,500	5,701	5,210	7,562
Average for above Classes	**	**	**	4,966	4,665	4,876	5,133	5,047	5,340	5,292	5,004	4,920
Investment Income Predominates	5,050	6,331	4,736	5,131	5,867	6,072	5,119	5,070	5,758	5,668	5,704	6,107
Pension Income Predominates	2,329	2,775	2,204	2,569	2,324	2,350	2,368	3,408	2,970	2,777	3,019	2,950
Average for above Classes	4,741	6,141	4,509	4,894	5,552	5,654	4,740	4,858	5,204	5,273	5,322	5,362
Estates	1,571	1,385	5,041	4,392	3,838	5,552	3,416	2,756	1,209	2,984	2,342	400
Unclassified	8,400	1,950	-	-	3,720	4,439	5,280	4,157	4,275	4,938	4,401	3,863
Average for all Classes	2,994	3,175	3,309	3,367	3,361	3,504	3,665	3,820	3,995	4,147	4,180	4,292

\* Also includes North West Territories.  
\*\* Breakdown for this section not available previous to 1953.  
- Insufficient returns - included in total but not shown separately.

Table 63. DISTRIBUTION OF TAXABLE RETURNS BY SOURCES OF INCOME FOR MAJOR CITIES, ALBERTA

1946 and 1951-1961															
Sources of Income															
Year	No. of Returns	Wages and Salaries	Business Income	Professional Income	Commission Income	Farm or Fishing Income	Old Age Pension Income	Dividends	Bond & Bank Interest	Rental Income	Annuity Income	Estate Income	Mortgage Interest	Miscellaneous Income	Total Income Assessed
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
CALGARY															
1946	33,969	55,604	6,169	2,528	1,339	88	-	1,520	689	992	69	488	91	76	69,653
1951	45,780	121,594	11,477	3,798	3,737	1,871	-	3,593	1,336	1,658	97	492	265	397	150,315
1952	52,590	145,032	16,100	4,238	4,110	2,296	378	2,240	1,776	2,451	115	541	406	250	179,933
1953	58,990	170,497	14,092	5,157	5,962	2,422	507	4,677	1,194	3,101	118	1,085	945	430	210,187
1954	61,090	184,720	13,709	4,961	4,163	762	550	4,823	1,694	3,255	139	1,360	688	1,153	221,977
1955	63,810	199,568	14,124	6,521	6,238	1,551	428	7,462	1,992	2,404	189	1,250	935	1,008	243,670
1956	69,514	222,893	15,579	7,339	7,769	2,425	665	4,975	2,044	4,637	240	1,495	796	1,096	271,553
1957	75,082	257,853	14,617	8,202	9,004	2,890	803	6,191	2,463	4,048	230	977	607	1,294	309,179
1958	79,083	286,677	13,177	8,722	7,213	2,475	1,185	5,204	3,584	5,086	244	1,678	1,129	2,586	338,960
1959	82,236	314,125	14,590	10,588	8,617	2,615	1,144	6,893	3,944	4,411	321	906	1,483	2,442	372,078
1960	83,907	327,416	15,093	11,473	5,557	2,307	1,263	6,475	4,371	3,300	258	1,426	1,244	2,202	382,384
1961	87,282	342,573	15,311	11,397	7,248	2,965	1,591	6,452	5,254	3,514	263	1,484	1,641	3,857	403,548
EDMONTON															
1946	37,523	61,630	4,727	2,264	632	638	-	916	816	678	64	189	72	78	72,704
1951	55,080	146,300	10,359	4,923	2,835	531	-	2,244	560	1,938	90	552	262	242	170,836
1952	66,270	182,154	15,580	5,739	3,767	1,199	275	2,308	803	1,617	58	746	357	353	214,956
1953	74,290	215,217	13,952	5,704	5,383	1,722	286	2,547	1,013	2,306	55	800	510	767	250,262
1954	77,450	226,831	14,617	6,737	4,642	573	432	3,874	1,645	2,332	164	748	659	1,478	264,732
1955	84,000	258,340	14,435	7,040	5,027	821	480	3,585	1,344	2,900	173	600	713	1,805	297,263
1956	91,081	293,960	17,094	9,696	7,540	1,311	495	4,160	1,818	2,735	176	657	1,067	949	341,658
1957	95,524	324,682	14,255	8,568	5,784	833	739	6,053	2,443	3,535	99	800	1,343	1,127	370,261
1958	96,215	331,187	19,466	12,368	7,927	1,038	914	5,331	2,583	2,659	173	917	1,991	1,314	387,868
1959	95,499	348,768	14,686	12,467	9,154	1,127	774	5,056	3,370	3,051	322	669	2,187	1,650	403,280
1960	97,257	357,324	12,262	12,732	8,131	723	999	4,840	3,919	2,792	324	981	1,888	1,788	408,702
1961	107,559	408,758	14,414	14,993	8,050	617	1,349	5,846	5,223	2,879	210	1,593	1,980	2,198	468,110
LETHBRIDGE															
1946	5,332	8,517	1,405	684	38	508	-	223	137	169	11	32	4	-	11,728
1951	6,490	15,126	2,352	570	177	1,794	-	288	202	457	2	70	171	17	21,226
1952	8,250	19,902	2,081	531	915	2,715	93	301	251	788	5	299	80	10	27,971
1953	8,350	20,473	3,002	825	565	1,494	68	359	300	463	2	103	62	25	27,741
1954	8,850	23,420	2,195	1,347	594	1,174	77	376	271	906	13	345	211	96	31,025
1955	9,090	24,470	2,576	528	756	1,115	92	199	207	443	16	44	22	31	30,499
1956	9,368	25,200	2,326	1,671	796	1,796	76	431	296	591	1	180	104	111	33,579
1957	10,249	29,169	2,927	1,174	839	1,975	135	546	382	854	15	269	86	70	38,441
1958	10,573	31,109	3,157	1,218	1,545	1,562	170	526	527	612	55	148	112	204	40,945
1959	10,732	33,584	3,477	1,621	796	1,777	276	439	752	676	2	93	165	90	43,748
1960	10,933	35,754	2,350	1,772	1,104	2,581	262	495	724	621	17	312	189	263	46,444
1961	10,940	35,368	2,601	1,896	815	2,802	255	554	617	659	4	195	116	312	46,195
MEDICINE HAT															
1946	3,442	5,406	833	240	47	144	-	90	127	201	5	61	-	-	7,154
1951	3,680	8,885	1,018	286	151	469	-	159	92	62	22	11	91	9	11,255
1952	4,600	10,870	1,471	538	40	1,267	49	56	78	169	3	13	24	3	14,581
1953	5,110	11,845	1,977	575	101	1,177	44	80	95	311	11	-	55	7	16,278
1954	4,730	11,932	1,277	570	119	960	53	119	128	164	8	-	61	10	15,401
1955	5,090	12,940	1,758	265	327	1,489	66	94	127	252	1	72	55	25	17,471
1956	6,011	15,601	1,860	411	111	2,147	30	188	135	160	20	14	97	49	20,823
1957	6,594	17,567	1,684	501	150	1,997	70	191	132	301	15	27	78	122	22,835
1958	5,942	17,395	1,049	398	415	1,896	57	179	319	390	40	34	147	133	22,442
1959	6,787	19,509	1,501	383	362	2,743	83	238	262	266	14	1	116	18	25,496
1960	7,496	23,257	1,999	575	282	2,116	97	155	276	216	9	33	75	131	29,221
1961	6,367	20,114	1,834	631	281	1,432	213	429	577	82	24	54	135	139	25,945
RED DEER															
1961	5,889	20,687	1,811	701	196	258	35	386	285	368	1	2	136	133	25,000
OTHER AREAS															
1946	48,487	57,484	12,375	1,788	635	19,922	-	585	1,040	1,441	40	391	135	75	95,911
1951	65,180	118,705	21,940	3,067	908	54,753	-	1,730	1,080	1,553	114	1,324	374	143	205,691
1952	77,640	148,838	30,404	3,326	1,390	63,929	510	2,174	1,204	2,132	45	407	513	324	255,196
1953	81,790	167,030	26,230	3,494	1,795	58,945	602	1,671	1,354	2,804	37	337	426	167	264,892
1954	72,620	164,373	22,055	2,430	1,913	24,424	490	1,429	1,601	1,294	30	447	638	1,098	222,222
1955	74,620	178,102	25,842	4,098	1,773	21,684	572	2,638	1,854	2,195	52	435	429	420	240,094
1956	83,043	200,007	26,774	4,490	1,769	37,418	718	2,584	1,978	2,864	26	554	597	713	280,492
1957	92,430	240,186	27,821	4,993	2,034	41,592	833	3,347	2,265	2,849	43	731	1,080	743	328,527
1958	97,462	251,127	32,880	5,834	2,057	58,201	1,495	3,259	3,432	3,966	41	897	1,245	875	365,309
1959	105,259	288,914	30,923	6,285	3,479	56,813	1,768	3,121	4,036	3,452	110	658	1,072	1,048	401,679
1960	110,656	315,685	35,324	6,599	1,758	54,809	1,672	3,704	4,475	2,542	41	697	1,396	1,282	429,982
1961	101,422	283,147	31,302	6,858	2,444	62,008	1,954	2,982	5,716	1,488	83	1,048	1,571	1,763	402,365



Table 64. DISTRIBUTION OF INCOME CLASSES BY NUMBER OF TAXABLE RETURNS - ALBERTA, BY MAJOR CITIES, 1948-1961

TOTAL ALBERTA														
Income Classes	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Under - \$1,000	11,800	120	190	770	1,860	2,180	2,070	1,590	1,780	2,780	1,160	1,500	1,480	1,402
\$1,000 - 1,999	62,540	46,510	47,000	44,170	48,130	49,680	49,720	48,740	48,640	47,280	45,620	44,441	45,320	44,100
2,000 - 2,999	57,760	52,000	55,350	63,140	67,380	68,120	66,330	68,630	67,600	66,820	64,300	62,760	62,550	62,900
3,000 - 3,999	17,990	24,020	26,130	37,240	49,990	56,230	56,280	57,760	65,620	70,520	71,460	69,280	71,460	69,660
4,000 - 4,999	6,240	9,070	9,660	14,040	19,580	25,370	25,520	29,810	34,980	41,380	47,360	52,780	54,680	57,360
5,000 - 5,999	2,930	4,030	3,970	6,490	8,590	11,310	10,390	13,140	16,800	21,920	24,960	28,421	31,140	35,160
6,000 - 6,999	1,790	2,270	2,280	2,950	4,250	5,160	5,150	5,980	8,320	10,640	12,761	15,460	16,000	18,120
7,000 - 7,999	1,030	1,680	1,420	1,950	2,450	3,050	2,430	2,560	4,520	5,582	6,720	7,920	9,121	10,620
8,000 - 8,999	810	1,140	700	1,320	1,480	1,810	1,510	2,030	2,780	3,500	4,060	5,060	5,260	5,520
9,000 - 9,999	530	680	710	890	1,170	1,190	1,070	1,090	1,940	2,260	2,900	3,380	3,600	3,860
10,000 - 14,999	1,180	1,850	1,920	1,850	2,550	2,690	2,280	3,150	3,700	4,679	4,956	6,101	6,128	6,740
Over - 15,000	910	1,230	1,220	1,380	1,920	1,740	1,990	2,130	1,192	1,241	1,471	1,824	1,841	2,163
Over - 20,000									1,145	1,277	637	666	736	855
Over - 25,000											910	920	933	999
CALGARY														
Under - \$1,000	2,300	40	80	130	330	480	550	450	660	760	540	460	420	381
\$1,000 - 1,999	16,020	12,510	13,140	11,460	11,570	12,020	12,320	11,630	11,500	10,980	10,820	9,680	10,520	10,300
2,000 - 2,999	14,430	13,970	14,880	17,030	17,120	17,650	17,640	18,650	17,000	16,800	16,980	16,560	16,300	16,700
3,000 - 3,999	4,010	5,510	6,740	9,340	13,270	14,800	15,220	15,560	18,160	19,020	18,320	18,060	17,800	18,200
4,000 - 4,999	1,350	2,130	2,370	3,220	4,710	6,440	7,290	7,930	10,260	11,620	13,920	14,780	14,900	16,040
5,000 - 5,999	630	740	900	1,570	1,870	2,980	2,880	3,820	4,380	6,300	7,420	8,441	8,740	9,840
6,000 - 6,999	460	480	470	720	930	1,330	1,540	1,650	2,360	2,720	3,600	4,920	5,340	5,480
7,000 - 7,999	290	340	410	500	630	830	890	850	1,380	1,801	2,080	2,520	3,181	3,340
8,000 - 8,999	250	250	120	380	420	510	590	550	860	1,380	1,280	2,000	1,620	1,520
9,000 - 9,999	170	110	120	280	390	390	390	480	660	1,000	900	1,200	1,220	1,380
10,000 - 14,999	350	460	610	620	710	770	920	1,210	1,456	1,756	2,096	2,318	2,431	2,422
Over - 15,000	310	440	450	530	640	790	860	1,030	337	452	479	644	738	866
Over - 20,000									501	493	239	259	275	363
Over - 25,000											409	394	422	450
EDMONTON														
Under - \$1,000	3,230	50	60	400	780	820	830	630	700	1,280	380	480	520	621
\$1,000 - 1,999	19,160	15,580	15,730	14,730	16,270	16,610	16,850	17,200	16,700	15,900	14,780	13,900	13,540	13,640
2,000 - 2,999	15,290	15,000	17,200	19,550	21,030	21,380	22,250	22,930	23,000	22,480	21,460	19,520	20,200	21,280
3,000 - 3,999	4,460	6,210	7,660	11,190	15,110	17,740	19,370	20,050	22,320	23,120	24,020	21,720	23,000	23,420
4,000 - 4,999	1,350	2,270	2,980	4,330	6,400	8,630	9,220	11,840	12,860	14,580	15,640	17,200	16,660	19,660
5,000 - 5,999	690	1,020	1,070	1,990	2,780	3,900	3,670	5,100	6,480	7,980	8,160	8,820	9,820	12,180
6,000 - 6,999	320	530	570	860	1,350	1,770	1,980	2,420	3,040	3,920	4,361	5,140	5,020	6,200
7,000 - 7,999	190	420	410	570	540	940	780	920	1,920	1,861	2,340	2,740	2,520	3,460
8,000 - 8,999	100	230	150	360	360	600	480	830	1,060	1,080	1,400	1,620	1,700	2,260
9,000 - 9,999	100	210	150	200	310	420	380	300	780	600	1,020	980	1,240	1,100
10,000 - 14,999	270	370	480	410	750	950	870	1,090	1,219	1,675	1,497	2,068	1,899	2,291
Over - 15,000	250	320	340	490	590	530	770	690	545	490	528	708	502	748
Over - 20,000									457	558	245	231	258	303
Over - 25,000											384	372	378	396
LETHBRIDGE														
Under - \$1,000	330	-	-	40	*	*	*	*	40	80	-	-	20	-
\$1,000 - 1,999	2,040	1,780	1,800	1,500	1,990	1,910	2,000	1,990	1,900	1,860	2,000	1,881	1,660	1,420
2,000 - 2,999	2,220	1,920	2,280	2,440	2,760	2,640	2,650	2,590	2,740	2,540	2,440	2,260	2,300	2,340
3,000 - 3,999	640	820	1,050	1,250	1,880	2,170	2,140	2,310	2,240	2,540	2,740	2,440	2,340	2,640
4,000 - 4,999	190	360	420	580	780	720	790	1,200	940	1,600	1,440	1,700	1,980	1,840
5,000 - 5,999	80	150	180	250	220	310	540	440	760	660	840	1,020	940	1,180
6,000 - 6,999	50	90	80	100	150	130	150	200	240	360	360	640	500	580
7,000 - 7,999	30	90	100	70	130	*	130	100	80	160	160	180	420	300
8,000 - 8,999	40	60	50	40	*	*	*	*	120	100	220	160	140	80
9,000 - 9,999	50	40	50	60	*	*	*	*	60	20	60	140	220	160
10,000 - 14,999	80	70	120	90	100	150	100	*	141	224	166	172	257	266
Over - 15,000	40	100	110	70	130	*	140	*	70	54	92	65	90	66
Over - 20,000									37	51	28	26	32	32
Over - 25,000											27	48	34	36
MEDICINE HAT														
Under - \$1,000	330	-	-	10	*	*	-	*	20	20	-	20	100	-
\$1,000 - 1,999	1,490	1,020	1,120	1,010	1,030	1,250	1,150	1,160	1,300	1,440	1,060	1,200	1,000	1,000
2,000 - 2,999	1,280	1,100	1,160	1,390	1,650	1,820	1,520	1,690	1,760	1,740	1,340	1,520	1,580	1,260
3,000 - 3,999	450	520	480	690	1,050	1,010	1,070	1,110	1,460	1,480	1,620	1,660	2,080	1,500
4,000 - 4,999	170	180	250	280	360	440	460	480	680	980	740	1,120	1,260	1,080
5,000 - 5,999	70	40	70	180	270	300	270	270	260	500	440	660	640	760
6,000 - 6,999	10	60	20	10	*	*	120	120	220	220	460	320	400	280
7,000 - 7,999	10	20	-	-	*	*	*	*	120	60	40	100	140	180
8,000 - 8,999	10	20	10	20	*	*	*	*	40	20	120	40	100	120
9,000 - 10,000	20	10	-	10	*	*	*	*	20	20	-	-	60	40
10,000 - 14,999	20	70	30	50	*	*	*	100	91	72	86	99	78	95
Over - 15,000	10	20	40	30	*	*	*	*	16	20	17	27	34	32
Over - 20,000									24	22	11	10	15	12
Over - 25,000											8	11	9	8
OTHER AREAS														
Under - \$1,000	5,610	30	50	190	710	780	630	460	360	640	240	540	420	400
\$1,000 - 1,999	23,830	15,620	15,210	15,470	17,270	17,890	17,400	16,760	17,240	17,100	16,960	17,780	18,600	16,960
2,000 - 2,999	24,540	20,010	19,830	22,730	24,820	24,630	22,270	22,770	23,100	23,260	22,080	22,900	22,170	19,960
3,00														

Table 65. PUBLIC AND PRIVATE INVESTMENT IN ALBERTA -- 1948-1963<sup>1</sup>  
(Millions of Dollars)

Capital, Repair and Maintenance Expenditures					Capital, Repair and Maintenance Expenditures				
Machinery					Machinery				
Year	Construction	Equipment	Total		Year	Construction	Equipment	Total	
	\$	\$	\$			\$	\$	\$	
1. Primary Industries and Construction ...	1948	*	*	**	5. (Continued)	1959	3.2	8.4	11.6
	1949	51.5	113.3	164.8		1960	2.8	9.6	12.4
	1950	67.0	125.5	192.5		1961	1.8	5.4	7.2
	1951	94.6	139.5	234.1		1962	0.6	5.3	5.9
	1952	106.6	166.2	272.8		1963	1.4	5.3	6.7
	1953	118.6	150.4	269.0	6. Products of	1948	*	*	*
	1954	106.3	131.7	238.0	Petroleum and	1949	1.7	2.7	4.4
	1955	157.4	150.8	308.2	Coal .....	1950	0.3	6.4	6.7
	1956	187.5	192.7	380.2		1951	2.4	12.0	14.4
	1957	157.1	178.9	336.0		1952	6.1	4.5	10.6
	1958	157.0	164.3	321.3		1953	3.9	2.1	6.0
	1959	178.5	203.0	381.5		1954	14.1	7.8	21.9
	1960	200.4	193.0	393.4		1955	23.1	1.3	24.4
	1961	252.9	190.9	443.8		1956	20.4	3.2	23.6
	1962	203.4	207.6	411.0		1957	19.0	0.9	19.9
	1963	226.0	217.4	443.4		1958	43.7	1.9	45.6
2. Manufacturing	1948	*	*	*		1959	33.3	2.5	35.8
Foods and	1949	2.2	5.0	7.2		1960	7.3	1.4	8.7
Beverage .....	1950	2.2	5.3	7.5		1961	3.3	0.6	3.9
	1951	3.3	5.1	8.4		1962	4.0	1.1	5.1
	1952	2.0	4.5	6.5		1963	3.8	0.7	4.5
	1953	2.5	6.6	9.1	7. Other	1948	*	*	*
	1954	2.9	6.7	9.6	Manufacturing .....	1949	1.8	6.5	8.3
	1955	2.4	5.6	8.0		1950	2.0	7.5	9.5
	1956	3.5	6.8	10.3		1951	9.3	12.3	21.6
	1957	2.1	6.4	8.5		1952	38.8	29.4	68.2
	1958	2.8	6.5	9.3		1953	21.7	58.2	79.9
	1959	3.3	7.3	10.6		1954	6.9	18.0	24.9
	1960	4.1	7.6	11.7		1955	11.0	17.5	28.5
	1961	3.7	8.5	12.2		1956	28.2	40.4	68.6
	1962	3.8	8.2	12.0		1957	10.0	30.6	40.6
	1963	3.6	10.7	14.3		1958	5.7	19.3	25.0
3. Iron and Steel	1952	***	***	***		1959	6.0	26.1	32.1
Products .....	1953	1.2	1.8	3.0		1960	12.9	33.1	46.0
	1954	0.8	1.1	1.9		1961	4.7	24.7	29.4
	1955	1.3	2.0	3.3		1962	6.7	31.8	38.5
	1956	3.4	7.5	10.9		1963	4.5	20.9	25.4
	1957	2.5	4.3	6.8	8. Sub-Total	1948	*	*	23.4
	1958	0.8	2.8	3.6	(Items 2-7) .....	1949	6.0	14.6	20.6
	1959	1.9	7.0	8.9		1950	4.9	19.5	24.4
Wood .....	(1960	0.6	2.3	2.9		1951	15.4	29.7	45.1
	(1961	0.5	2.0	2.5		1952	47.5	38.9	86.4
	(1962	0.4	1.7	2.1		1953	31.1	73.0	104.1
	(1963	1.2	1.9	3.1		1954	26.5	37.5	64.0
4. Transportation	1948	*	*	*		1955	45.1	32.9	78.0
Equipment .....	1949	0.3	0.4	0.7		1956	61.4	69.5	130.9
	1950	0.4	0.3	0.7		1957	35.4	47.3	82.7
	1951	0.4	0.3	0.7		1958	55.0	35.5	90.5
	1952	0.6	0.5	1.1		1959	48.1	52.0	100.1
	1953	0.7	0.7	1.4		1960	28.4	55.9	84.3
	1954	0.7	0.5	1.2		1961	14.4	42.5	56.9
	1955	0.5	0.4	0.9		1962	15.8	49.6	65.4
	1956	0.7	0.7	1.4		1963	14.9	40.7	55.6
	1957	0.9	0.7	1.6	9. Utilities .....	1948	*	*	61.8
	1958	1.1	0.6	1.7		1949	43.0	36.2	79.2
	1959	0.4	0.7	1.1		1950	51.7	35.2	86.9
Metal Fabricating ..	(1960	0.7	1.9	2.6		1951	50.0	47.1	97.1
	(1961	0.4	1.3	1.7		1952	72.3	52.8	125.1
	(1962	0.3	1.5	1.8		1953	78.9	51.1	130.0
	(1963	0.4	1.2	1.6		1954	82.8	61.5	144.3
5. Non-Metallic	1952	***	***	***		1955	87.1	56.5	143.6
Mineral	1953	1.1	3.6	4.7		1956	103.9	82.7	186.6
Products .....	1954	1.1	3.4	4.5		1957	121.5	88.8	210.3
	1955	6.8	6.1	12.9		1958	118.2	86.3	204.5
	1956	5.2	10.9	16.1		1959	112.0	78.5	190.5
	1957	0.9	4.4	5.3		1960	135.0	84.4	219.4
	1958	0.9	4.4	5.3		1961	152.7	89.9	242.6
						1962	95.5	88.3	183.8



PUBLIC AND PRIVATE INVESTMENT IN ALBERTA -- 1948-1963<sup>1</sup> (Continued)  
(Millions of Dollars)

Capital, Repair and Maintenance Expenditures					Capital, Repair and Maintenance Expenditures								
Machinery Equipment					Machinery Equipment								
Year	Construction			Total	Year	Construction			Total				
	\$			\$		\$			\$				
9.	(Continued)	1963	106.9	89.9	196.8	12.	Institutional Services and Government Departments	1948	*	*	74.3		
10.	Trade, Finance and Commercial Service	1948	*	*	**	1949		1949	73.8	14.2	88.0		
		1949	15.1	10.8	25.9	1950		1950	79.5	10.7	90.2		
		1950	23.3	18.1	41.4	1951		1951	109.8	16.1	125.9		
		1951	31.4	23.3	54.7	1952		1952	116.0	18.8	134.8		
		1952	25.3	29.8	55.1			1953	181.4	17.5	198.9		
								1954	143.0	16.7	159.7		
								1955	171.6	16.7	188.3		
								1956	190.3	17.6	207.9		
								1957	204.0	19.1	223.1		
								1958	198.2	20.1	218.3		
								1959	222.9	21.3	244.2		
								1960	230.8	24.1	254.9		
								1961	224.2	27.6	251.8		
								1962	231.3	32.2	263.5		
								1963	218.1	36.7	254.8		
							13.	Total (Items 1-8 to 12)	1948	*	*	390.1	
									1949	280.5	189.1	469.6	
		11.	Housing	1948	65.6		65.6			1950	312.2	209.0	521.2
				1949	91.1		91.1			1951	379.1	255.7	634.8
1950	85.8				85.8			1952	454.7	306.5	761.2		
1951	77.9				77.9								
1952	87.0				87.0			1953	569.5	327.6	897.1		
								1954	530.4	276.7	807.1		
								1955	636.0	282.1	918.1		
								1956	725.6	390.0	1115.6		
								1957	707.2	363.5	1070.7		
								1958	786.7	341.6	1128.3		
								1959	818.7	397.9	1216.6		
								1960	815.5	405.1	1220.6		
								1961	876.6	393.3	1269.9		
								1962	812.4	419.8	1232.2		
								1963	833.3	426.5	1259.8		
</													

TABLE 66. THE CONSUMER PRICE INDEX — CANADA, 1914-1962  
(1949 = 100)

YEAR	INDEX	YEAR	INDEX	YEAR	INDEX	YEAR	INDEX	YEAR	INDEX	YEAR	INDEX
1914	49.6	1922	74.9	1930	75.3	1938	63.7	1946	77.5	1954	116.2
1915	50.3	1923	75.2	1931	67.9	1939	63.2	1947	84.8	1955	116.4
1916	54.2	1924	74.0	1932	61.7	1940	65.7	1948	97.0	1956	118.1
1917	63.7	1925	74.6	1933	58.8	1941	69.6	1949	100.0	1957	121.9
1918	72.0	1926	75.9	1934	59.6	1942	72.9	1950	102.9	1958	125.1
1919	78.8	1927	74.6	1935	59.9	1943	74.2	1951	113.7	1959	126.5
1920	90.5	1928	75.0	1936	61.1	1944	74.6	1952	116.5	1960	128.0
1921	80.9	1929	75.8	1937	63.0	1945	75.0	1953	115.5	1961	129.2
										1962	130.7

TABLE 67. COMPONENT GROUP INDEXES OF THE CONSUMER PRICE INDEX — CANADA, 1949-1962  
(1949 = 100)

YEAR	FOOD	HOUS- ING	CLOTH- ING	TRANSPOR- TATION	HEALTH AND PERSONAL CARE	RECREATION AND READING	TOBACCO AND ALCOHOL	YEAR	FOOD	HOUS- ING	CLOTH- ING	TRANSPOR- TATION	HEALTH AND PERSONAL CARE	RECREATION AND READING	TOBACCO AND ALCOHOL
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1956	113.4	124.2	108.6	123.3	130.0	125.3	107.7
1950	102.6	104.1	99.7	105.4	101.8	102.0	102.7	1957	118.6	126.7	108.5	129.9	138.2	129.8	109.4
1951	117.0	113.7	109.8	113.0	111.0	109.7	111.5	1958	122.1	129.0	109.7	133.8	145.4	138.4	110.6
1952	116.8	118.0	111.8	117.4	117.8	115.7	113.3	1959	121.1	131.4	109.9	138.4	150.2	141.7	114.0
1953	112.6	120.0	110.1	119.2	120.1	116.7	108.0	1960	122.2	132.7	110.9	140.3	154.5	144.3	115.8
1954	112.2	121.6	109.4	120.0	124.5	119.5	107.3	1961	124.0	133.2	112.5	140.6	155.3	146.1	116.3
1955	112.1	122.4	108.0	118.5	126.7	122.6	107.4	1962	126.2	134.8	113.5	140.4	158.3	147.3	117.8

TABLE 68. CONSUMER PRICE INDEXES FOR REGIONAL CITIES — CANADA, 1940-1962  
(1949 = 100)

YEAR	ST. JOHN'S NFL'D	HALIFAX	SAINT JOHN	MONTREAL	OTTAWA	TORONTO	WINNIPEG	SASKATOON REGINA	EDMONTON CALGARY	VANCOUVER
1940		68.6	66.4	64.8	65.3	66.1	66.6	64.7	66.2	63.6
1941		71.3	69.8	68.6	68.7	69.9	69.8	68.5	69.0	66.9
1942		74.2	73.3	71.9	72.0	73.6	72.9	71.5	72.0	70.2
1943		76.0	74.7	73.4	73.1	74.4	74.0	72.6	73.9	72.4
1944		76.9	75.4	73.6	73.3	74.9	74.5	73.5	74.6	72.8
1945		77.6	75.8	74.4	73.8	75.3	75.2	74.0	75.3	73.6
1946		79.6	77.9	76.9	76.5	77.9	77.5	76.6	77.8	75.9
1947		86.3	84.6	84.3	84.5	85.5	84.3	84.4	84.6	83.3
1948		96.8	97.0	96.6	96.5	97.0	95.8	96.9	96.1	96.0
1949		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950		102.1	103.3	103.7	103.1	104.1	103.8	102.2	103.9	103.6
1951		112.1	114.1	116.1	115.3	115.4	114.6	111.7	113.5	114.3
1952	103.5	115.3	117.4	117.6	116.8	117.5	116.1	112.8	114.8	117.4
1953	102.2	113.2	115.3	116.3	115.0	116.8	114.4	113.1	114.0	116.1
1954	102.8	114.1	116.6	116.8	116.2	118.3	115.3	114.2	114.9	117.4
1955	104.2	114.8	117.7	116.9	117.2	118.8	115.9	114.6	114.6	117.9
1956	106.8	116.1	118.8	118.4	119.2	120.6	117.2	115.8	115.7	119.6
1957	109.4	119.8	122.6	121.8	123.2	125.2	120.0	119.1	118.8	122.6
1958	112.0	122.9	125.3	125.5	125.5	128.6	123.0	122.0	121.4	125.6
1959	114.3	125.9	127.7	126.9	126.9	128.9	123.7	123.1	123.0	127.9
1960	115.5	127.2	129.2	127.9	128.6	130.4	125.6	124.4	124.1	129.0
1961	116.7	128.5	130.2	129.3	130.2	131.2	127.5	125.4	125.0	129.4
1962	117.6	130.2	131.4	130.9	131.7	132.4	129.1	127.5	126.2	129.8

WHOLESALE PRICES

TABLE 69. GENERAL WHOLESALE PRICE INDEX — CANADA, 1929-1962  
(1935-1939 = 100)

YEAR	INDEX	YEAR	INDEX	YEAR	INDEX
1929	124.6	1940	108.0	1951	240.2
1930	112.9	1941	116.4	1952	226.0
1931	94.0	1942	123.0	1953	220.7
1932	86.9	1943	127.9	1954	217.0
1933	87.4	1944	130.6	1955	218.9
1934	93.4	1945	132.1	1956	225.6
1935	94.4	1946	138.9	1957	227.4
1936	96.8	1947	163.3	1958	227.8
1937	107.7	1948	193.4	1959	230.6
1938	102.0	1949	198.3	1960	230.9
1939	99.2	1950	211.2	1961	233.3
				1962	240.0

TABLE 70. SELECTED PRICE INDICATORS - GENERAL WHOLESALE INDEX AND PRINCIPAL COMPONENTS - CANADA, 1952-1962  
(1935-1939 = 100)

YEAR	GENERAL WHOLESALE INDEX	VEGETABLE PRODUCTS	ANIMAL PRODUCTS	TEXTILE PRODUCTS	WOOD PRODUCTS	IRON PRODUCTS	NON-FERROUS METAL PRODUCTS	NON-METALLIC MINERAL PRODUCTS	CHEMICAL PRODUCTS
1952	226.0	210.3	248.2	251.5	291.0	219.0	172.9	173.9	180.1
1953	220.7	199.0	241.7	239.0	288.6	221.4	168.6	176.9	175.7
1954	217.0	196.8	236.0	231.1	286.8	213.4	167.5	177.0	176.4
1955	218.9	195.1	226.0	226.2	295.7	221.4	187.6	175.2	177.0
1956	225.6	197.1	227.7	230.2	303.7	239.8	199.2	180.8	180.1
1957	227.4	197.0	238.4	236.0	299.4	252.7	176.0	189.3	182.3
1958	227.8	198.1	250.7	229.0	298.5	252.6	167.3	188.5	183.0
1959	230.6	199.5	254.3	228.0	304.0	255.7	174.6	186.5	187.0
1960	230.9	203.0	247.6	229.8	303.8	256.2	177.8	185.6	188.2
1961	233.3	203.1	254.7	234.5	305.1	258.1	181.6	185.2	188.7
1962	240.0	211.6	262.5	241.2	315.8	256.2	192.1	189.1	190.5





*From clay pipe to ceramics, Medicine Hat boasts a major industry.*



*Barbecues and fireplaces all over Canada are ignited by these "lighters" produced in Edmonton.*



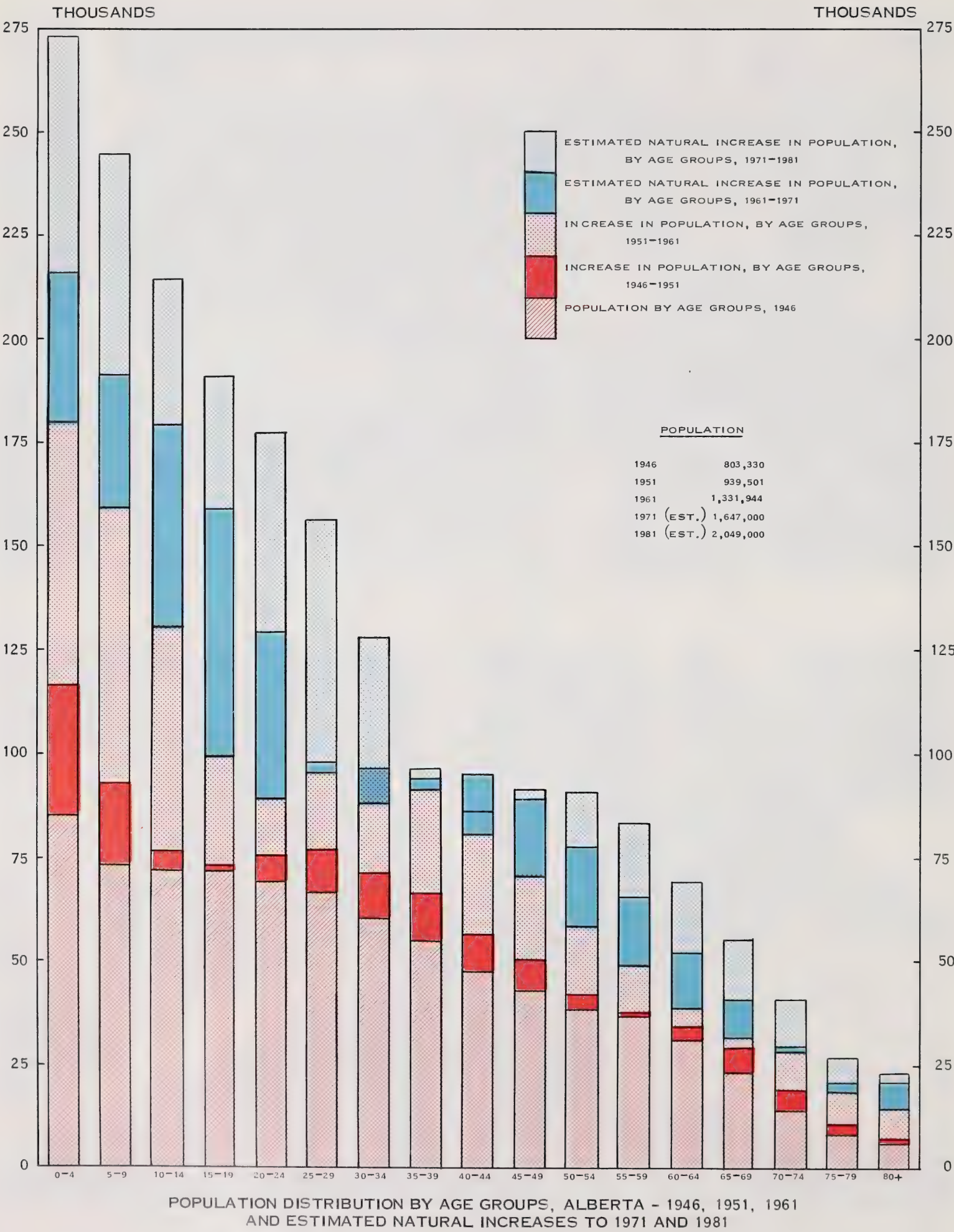




Table 71. POPULATION, BIRTHS, MARRIAGES, DEATHS, AND RATES--ALBERTA, 1905-1962

Year	Population	No. of Births*	Birth Rate Per 1,000 Population	No. of Marriages	Marriage Rate Per 1,000 Population	No. of Deaths*	Death Rate Per 1,000 Population	Infantile Death Rate Per 1,000 Live Births	Maternal Death Rate Per 1,000 Live Births	Rate of Natural Increase Per 1,000 Population	Ratio of Total Births to Total Deaths
1905		421		187		114					
1906	185,000	3,003	16.2	927	5.0	1,091	5.9	90.0		10.3	2.8
1907	236,000	4,732	20.1	1,907	8.1	1,578	6.7	100.3	6.3	13.4	3.0
1908	266,000	5,973	22.5	2,032	7.6	2,188	8.2	126.6	6.0	14.3	2.7
1909	301,000	6,897	22.9	2,384	7.9	2,662	8.8			14.1	2.6
1910	336,000	8,321	24.8	3,086	9.2	3,526	10.5	129.5	8.6	14.3	2.4
1911	374,000	8,813	23.6	3,630	9.7	3,618	9.7	134.5	9.8	13.9	2.4
1912	400,000	10,284	25.7	4,429	11.1	4,232	10.6	124.8	8.3	15.1	2.4
1913	429,000	11,871	27.7	5,053	11.8	4,432	10.3	120.5	7.1	17.4	2.7
1914	459,000	13,685	29.8	4,623	10.1	4,417	9.6	100.5	6.1	20.2	3.1
1915	480,000	13,452	28.0	4,202	8.8	3,588	7.5	87.9	5.8	20.5	3.7
1916	496,000	13,331	26.9	4,230	8.5	4,058	8.2	90.5	7.2	18.7	3.3
1917	508,000	13,576	26.7	4,270	8.4	4,047	8.0	87.3	6.5	18.7	3.4
1918	522,000	14,890	28.5	4,048	7.8	7,924	15.2	107.1	5.5	13.3	1.9
1919	541,000	14,130	26.1	4,718	8.7	5,507	10.2	110.3	6.4	15.9	2.6
1920	565,000	16,565	29.3	5,110	9.0	5,675	10.0	93.7	8.3	19.3	2.9
1921	588,000	16,561	28.2	4,661	7.9	4,940	8.4	84.0	6.7	19.8	3.4
1922	592,000	16,163	27.3	4,272	7.2	5,264	8.9	91.3	6.9	18.4	3.1
1923	593,000	15,060	25.4	4,117	6.9	5,006	8.4	94.2	5.6	17.0	3.0
1924	597,000	14,597	24.5	4,159	7.0	4,858	8.1	84.1	6.2	16.4	3.0
1925	602,000	14,924	24.8	4,355	7.2	4,697	7.8	75.4	5.8	17.0	3.2
1926	608,000	14,456	23.8	4,503	7.4	5,159	8.5	85.3	5.9	15.3	2.8
1927	633,000	14,897	23.5	4,707	7.4	5,059	8.0	74.5	6.4	15.5	2.9
1928	658,000	15,692	23.8	5,776	8.8	5,699	8.7	76.5	6.8	15.1	2.8
1929	684,000	16,924	24.7	6,004	8.8	6,239	9.1	77.4	7.3	15.6	2.7
1930	708,000	17,649	24.9	5,334	7.5	5,496	7.8	63.6	6.5	17.1	3.2
1931	732,000	17,252	23.6	5,142	7.0	5,302	7.2	69.4	5.0	16.4	3.3
1932	740,000	16,990	23.0	5,054	6.8	5,521	7.5	58.7	3.8	15.5	3.1
1933	750,000	16,123	21.5	5,389	7.2	5,346	7.1	59.9	4.5	14.4	3.0
1934	758,000	16,236	21.4	6,053	8.0	5,337	7.0	54.9	5.0	14.4	3.0
1935	765,000	16,183	21.2	6,010	7.9	5,729	7.5	57.8	4.3	13.7	2.8
1936	773,000	15,786	20.4	6,020	7.8	6,147	8.0	59.5	5.8	12.4	2.6
1937	776,000	15,903	20.5	6,345	8.2	6,261	8.1	62.5	4.8	12.4	2.5
1938	781,000	15,891	20.3	6,973	8.9	5,871	7.5	51.1	4.3	12.8	2.7
1939	786,000	16,470	21.0	7,838	10.0	5,789	7.4	46.3	3.6	13.6	2.8
1940	790,000	17,359	22.0	8,782	11.1	6,203	7.9	48.0	4.0	14.1	2.8
1941	796,000	17,308	21.7	8,470	10.6	6,385	8.0	50.8	3.1	13.7	2.7
1942	776,000	18,317	23.6	9,034	11.6	6,091	7.8	38.0	2.3	15.8	3.0
1943	785,000	19,290	24.6	7,771	9.9	6,524	8.3	42.0	2.7	16.3	3.0
1944	808,000	19,372	24.0	7,299	9.0	6,320	7.8	45.9	1.6	16.2	3.1
1945	808,000	19,939	24.7	7,310	9.0	6,454	8.0	43.2	2.4	16.7	3.1
1946	803,000	22,184	27.6	9,478	11.8	6,601	8.2	42.6	1.4	19.4	3.4
1947	825,000	24,631	29.9	8,797	10.7	6,543	7.9	37.1	0.9	22.0	3.8
1948	854,000	24,075	28.2	8,844	10.4	6,987	8.2	38.6	1.2	20.0	3.4
1949	885,000	24,935	28.2	9,037	10.2	7,083	8.0	33.0	1.0	20.2	3.5
1950	913,000	25,625	28.1	9,294	10.2	6,856	7.5	32.4	0.7	20.6	3.7
1951	939,000	27,003	28.8	9,305	9.9	7,167	7.6	32.9	0.6	21.2	3.8
1952	973,000	29,105	29.9	9,514	9.8	7,345	7.5	30.2	0.5	22.4	4.0
1953	1,012,000	31,376	31.0	10,126	10.0	7,646	7.6	29.6	0.7	23.4	4.1
1954	1,057,000	33,593	31.8	9,960	9.4	7,520	7.1	26.3	0.3	24.7	4.5
1955	1,091,000	34,357	31.5	9,844	9.0	7,956	7.3	25.8	0.4	24.2	4.3
1956	1,123,000	34,951	31.1	9,965	8.9	7,786	6.9	24.6	0.4	24.2	4.5
1957	1,164,000	35,718	30.7	10,117	8.7	8,255	7.1	27.0	0.3	23.6	4.3
1958	1,206,000	36,842	30.5	10,186	8.4	8,237	6.8	25.0	0.5	23.7	4.5
1959	1,248,000	38,080	30.5	10,402	8.3	8,481	6.8	24.0	0.4	23.7	4.5
1960	1,291,000	39,009	30.2	10,482	8.1	8,888	6.9	26.0	0.2	23.3	4.4
1961	1,332,000	38,914	29.2	10,474	7.9	8,863	6.7	27.0	0.2	22.5	4.4
1962**	1,370,000	38,804	28.3	10,423	7.6	9,264	6.8	25.0	0.4	21.5	4.2

\* Exclusive of Stillbirths

\*\* Preliminary

TABLE 72. POPULATION, BY CENSUS DIVISIONS, ALBERTA  
1956 - 1961

CENSUS DIVISION	1956		1961	
	NO.	PERCENT OF TOTAL %	NO.	PERCENT OF TOTAL %
1	34,496	3.1	39,140	2.9
2	74,991	6.7	83,306	6.3
3	30,426	2.7	30,967	2.3
4	14,294	1.3	15,020	1.1
5	38,120	3.4	38,115	2.9
6	237,886	21.2	317,989	23.9
7	40,214	3.6	40,837	3.1
8	64,168	5.7	76,533	5.7
9	17,239	1.5	20,274	1.5
10	71,500	6.3	70,177	5.3
11	323,539	28.8	410,679	30.8
12	44,947	4.0	47,310	3.6
13	45,033	4.0	45,431	3.4
14	15,846	1.4	19,282	1.4
15	70,417	6.3	76,884	5.8
TOTAL	1,123,116	100%	1,331,944	100%

TABLE 73. NUMERICAL AND PERCENTAGE DISTRIBUTION OF POPULATION  
BY RURAL AND URBAN, ALBERTA, 1901 - 1961

YEAR	TOTAL NO.	RURAL NO.	PERCENT OF TOTAL %	URBAN NO.	PERCENT OF TOTAL %
1901	73,022	61,171	83.8	11,851	16.2
1911	374,295	264,359	70.6	109,936	29.4
1921	588,454	411,284	69.9	177,170	30.1
1931	731,605	503,723	68.9	227,882	31.1
1941	796,169	545,564	68.5	250,605	31.5
1951	939,501	509,413	54.2	430,088	45.8
1961	1,331,944	480,368	36.1	851,576	63.9



TABLE 74. AREA AND DENSITY OF POPULATION FOR CENSUS DIVISIONS  
ALBERTA, 1956, 1961

CENSUS DIVISION	LAND AREA IN SQUARE MILES	POPULATION - 1956		POPULATION - 1961	
		POPULATION No.	DENSITY No.	POPULATION No.	DENSITY No.
1	8,079	34,496	4.27	39,140	4.84
2	6,991	74,991	10.73	83,306	11.92
3	4,794	30,426	6.35	30,967	6.46
4	8,474	14,294	1.69	15,020	1.77
5	6,476	38,120	5.89	38,115	5.89
6	4,946	237,886	48.10	317,989	64.29
7	7,581	40,214	5.30	40,837	5.39
8	5,655	64,168	11.35	76,533	13.53
9	17,775	17,239	0.97	20,274	1.14
10	8,167	71,500	8.75	70,177	8.59
11	5,578	323,539	58.00	410,679	73.62
12	50,242	44,947	0.89	47,310	0.94
13	9,378	45,033	4.80	45,431	4.84
14	11,980	15,846	1.32	19,282	1.61
15	92,684	70,417	0.76	76,884	0.83
ALBERTA	248,800	1,123,116	4.51	1,331,944	5.35

TABLE 75. POPULATION OF CITIES, TOWNS AND VILLAGES, AND PERCENTAGE  
OF TOTAL POPULATION, ALBERTA, 1901-1961

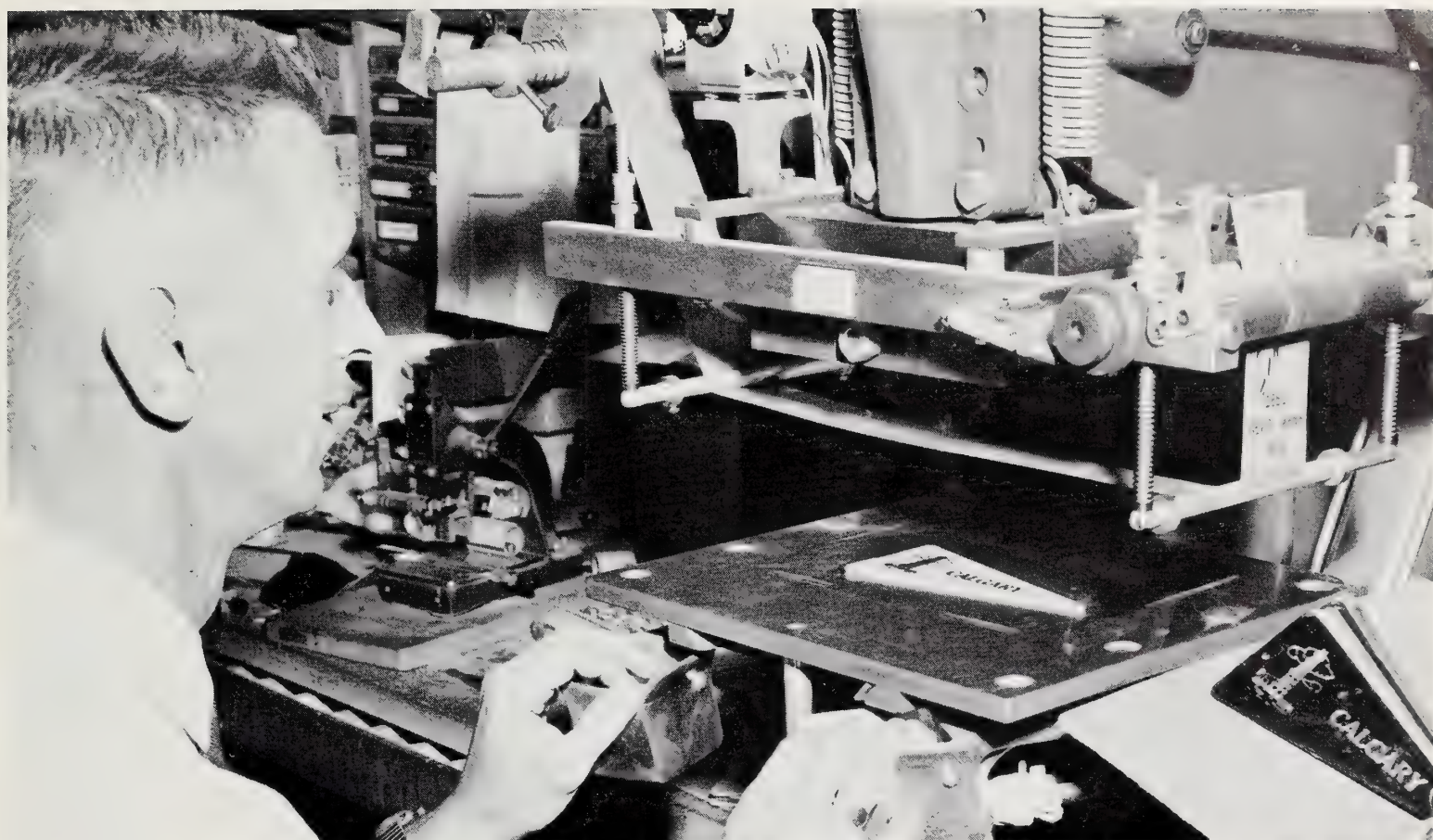
YEAR	CITIES No.	POPULATION			PERCENTAGE OF TOTAL POPULATION		
		TOWNS No.	VILLAGES No.		CITIES %	TOWNS %	VILLAGES %
1901	4,091	9,518	4,924		5.60	13.03	6.74
1911	90,252	25,881	21,529		24.11	6.91	5.75
1921	147,246	50,145	25,513		25.02	8.52	4.34
1931	194,203	50,155	34,150		26.54	6.86	4.67
1941	215,894	53,623	37,069		27.12	6.74	4.66
1951	342,002	98,565	47,621		36.40	10.49	5.07
1961	636,684	206,992	51,223		47.80	15.54	3.85

TABLE 76. POPULATION, RURAL AND URBAN, BY CENSUS DIVISIONS, ALBERTA, 1961

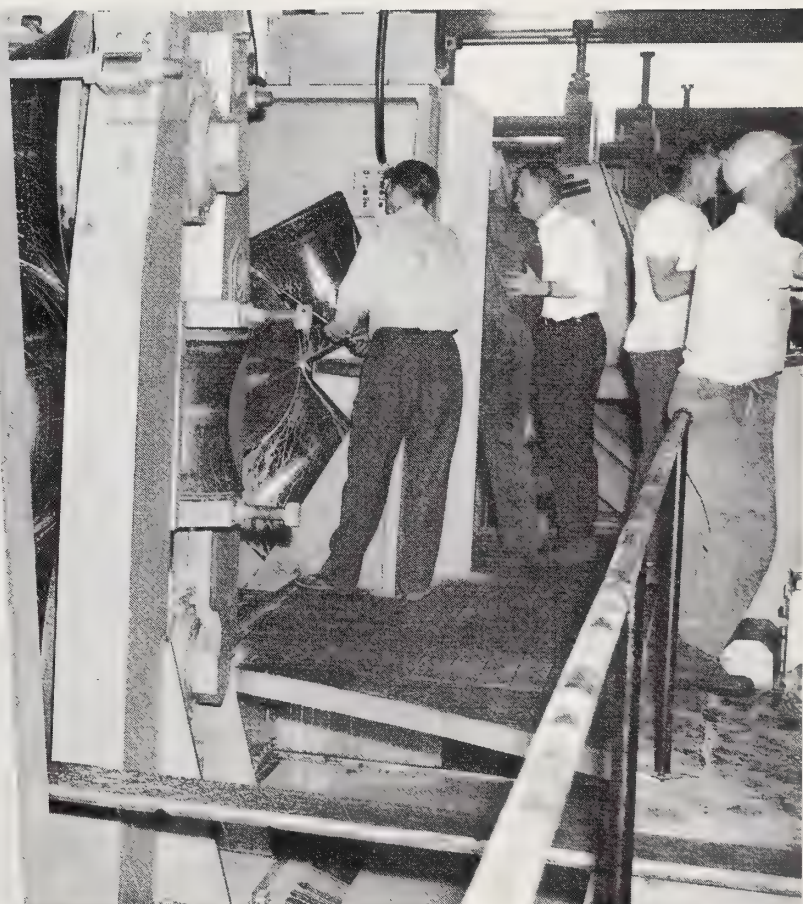
CENSUS DIVISION		TOTAL	TOTAL	RURAL			URBAN	
				PERCENT OF TOTAL ALBERTA	FARM	NON-FARM	TOTAL	PERCENT OF TOTAL ALBERTA
		No.	No.	%	No.	No.	No.	%
1	T	39,140	11,313	28.9	7,249	4,064	27,827	71.1
	M	19,835	6,095		3,960	2,135	13,740	
	F	19,305	5,218		3,289	1,929	14,087	
2	T	83,306	36,120	43.4	22,706	13,414	47,186	56.6
	M	43,101	19,520		12,352	7,168	23,581	
	F	40,205	16,600		10,354	6,246	23,605	
3	T	30,967	18,180	58.7	11,539	6,641	12,787	41.3
	M	16,009	9,585		6,209	3,376	6,424	
	F	14,958	8,595		5,330	3,265	6,363	
4	T	15,020	12,375	82.4	7,551	4,824	2,645	17.6
	M	8,168	6,803		4,232	2,571	1,365	
	F	6,852	5,572		3,319	2,253	1,280	
5	T	38,115	32,383	85.0	16,725	15,658	5,732	15.0
	M	20,266	17,365		9,106	8,259	2,901	
	F	17,849	15,018		7,619	7,399	2,831	
6	T	317,989	33,775	10.6	19,342	14,433	284,214	89.4
	M	161,032	18,094		10,575	7,519	142,938	
	F	156,957	15,681		8,767	6,914	141,276	
7	T	40,837	31,801	77.9	19,124	12,677	9,036	22.1
	M	21,510	17,003		10,532	6,471	4,507	
	F	19,327	14,798		8,592	6,206	4,529	
8	T	76,533	42,677	55.8	26,472	16,205	33,856	44.2
	M	40,040	23,146		14,464	8,682	16,894	
	F	36,493	19,531		12,008	7,523	16,962	
9	T	20,274	7,733	38.1	720	7,013	12,541	61.9
	M	11,080	4,453		418	4,035	6,627	
	F	9,194	3,280		302	2,978	5,914	
10	T	70,177	53,894	76.8	36,992	16,902	16,283	23.2
	M	36,986	28,964		20,267	8,697	8,022	
	F	33,191	24,930		16,725	8,205	8,261	
11	T	410,679	61,368	14.9	35,931	25,437	349,311	85.1
	M	209,518	33,346		19,902	13,444	176,172	
	F	201,161	28,022		16,029	11,993	173,139	
12	T	47,310	37,451	79.2	18,614	18,837	9,859	20.8
	M	25,387	20,349		10,219	10,130	5,038	
	F	21,923	17,102		8,395	8,707	4,821	
13	T	45,431	38,685	85.2	27,087	11,598	6,746	14.8
	M	24,575	21,187		15,011	6,176	3,388	
	F	20,856	17,498		12,076	5,422	3,358	
14	T	19,282	11,501	59.6	3,691	7,810	7,781	40.4
	M	10,683	6,565		2,050	4,515	4,118	
	F	8,599	4,936		1,641	3,295	3,663	
15	T	76,884	59,477	77.4	32,080	27,397	17,407	22.6
	M	41,193	32,235		17,677	14,558	8,958	
	F	35,691	27,242		14,403	12,839	8,449	
TOTAL	T	1,331,944	488,733	36.7	285,823	202,910	843,211	63.3
	M	689,383	264,710		156,974	107,736	424,673	
	F	642,561	224,023		128,849	95,174	418,538	

CITIES, TOWNS, AND VILLAGES OF 1,000 AND OVER, WHETHER INCORPORATED OR NOT, WERE CLASSED AS URBAN. "RURAL FARM" COMPRISES ALL PERSONS LIVING IN DWELLINGS SITUATED ON FARMS IN RURAL LOCALITIES. A FARM IS DEFINED AS A HOLDING OF ONE OR MORE ACRES WITH SALES OF AGRICULTURAL PRODUCTS OF \$50 OR MORE. "RURAL NON-FARM" COMPRISES ALL PERSONS LIVING IN CENTRES OF LESS THAN 1,000 IN POPULATION.





*"Little jobs" of great variety in plastics are the specialties of this Edmonton firm.*



*Radio frequency electric resistance welding is a "world first" in this Calgary plant, where large diameter pipe is manufactured.*



Table 77. AREA AND DENSITY OF POPULATION FOR INCORPORATED  
CITIES, TOWNS AND VILLAGES OF 2, 500 AND OVER  
ALBERTA, 1961

City, Town or Village	Land Area in Square Miles	Total No.	Population Per Square Mile No.
Beverly	2.00	9,041	4,521
Bowness	1.84	9,184	4,991
Brooks	2.14	2,827	1,321
Calgary	72.41	249,641	3,448
Camrose	2.88	6,939	2,409
Cardston	1.65	2,801	1,698
Coaldale	1.04	2,592	2,492
Drayton Valley	1.53	3,854	2,519
Drumheller	0.46	2,931	6,372
Edmonton	57.72	281,027	4,869
Edson	2.43	3,198	1,316
Forest Lawn	2.61	12,263	4,698
Fort Saskatchewan	2.97	2,972	1,001
Grande Prairie	3.24	8,352	2,578
Hanna	0.71	2,645	3,725
Hinton	5.50	3,529	642
Jasper Place	6.30	30,530	4,846
Lacombe	1.50	3,029	2,019
Lethbridge	9.88	35,454	3,588
Lloydminster	2.22	5,667	2,553
Medicine Hat	21.62	24,484	1,132
Montgomery	1.38	5,077	3,679
Peace River	0.67	2,543	3,796
Pincher Creek	0.73	2,961	4,056
Ponoka	0.40	3,938	9,845
Red Deer	12.50	19,612	1,569
St. Albert	7.24	4,059	561
St. Paul	1.48	2,823	1,907
Stettler	1.55	3,638	2,347
Taber	2.52	3,951	1,568
Vegreville	2.00	2,908	1,454
Wainwright	1.47	3,351	2,280
Wetaskiwin	2.70	5,300	1,963



Table 78. POPULATION OF INCORPORATED CITIES, TOWNS AND VILLAGES

ALBERTA, 1931 - 1961

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961
Acme	V	5	234	285	275	328
Airdrie	V	6	198	191	267	524
Alberta Beach	V	13	38	59	79	135
Alix	V	8	241	360	461	631
Alliance	V	7	260	233	281	291
Amisk	V	7	-	-	-	127
Andrew	V	10	115	326	625	601
Arrowwood	V	5	293	251	222	195
Athabasca	T	13	573	578	1,068	1,487
Barons	V	2	284	233	369	345
Barrhead	T	13	222	399	1,243	2,286
Bashaw	V	10	385	494	603	614
Bassano	T	2	615	582	624	815
Bawlf	V	10	183	227	236	203
Beaverlodge	T	15	211	331	514	897
Beiseker	V	6	230	240	325	360
Bellevue	V	9	-	-	-	1,323
Bentley	V	8	233	279	439	588
Berwyn	V	15	-	206	288	347
Betula Beach	V	11	-	-	-	7
Beverly	T	11	1,111	981	2,159	9,041
Big Valley	V	7	455	291	307	461
Bittern Lake	V	10	47	50	25	76
Black Diamond	T	6	683	890	1,154	1,043
Blackfalds	V	8	84	113	154	477
Blackie	V	6	251	223	224	184
Blairmore	T	9	1,629	1,731	1,933	1,980
Bonnyville	T	12	362	603	1,139	1,736
Botha	V	7	107	111	98	112
Bowden	V	8	233	234	277	437
Bow Island	T	1	314	291	653	1,122
Bowness	T	6	-	-	2,922	9,184
Boyle	V	13	-	-	-	346
Breton	V	11	-	-	-	428
Brooks	T	2	708	888	1,648	2,827
Bruderheim	V	10	280	237	387	299
Burdett	V	1	121	123	118	229
Calgary	C	6	83,761	88,904	129,060	249,641
Calmar	T	11	-	-	944	700
Camrose	C	10	2,258	2,598	4,131	6,939
Carbon	V	5	355	409	374	371
Cardston	T	3	1,672	1,864	2,487	2,801
Carmangay	V	5	279	229	285	297
Caroline	V	8	-	-	-	321
Carstairs	V	6	387	371	468	665

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961
Castor	T	7	634	625	798	1,025
Cayley	V	6	127	133	139	146
Cereal	V	4	185	142	135	195
Champion	V	5	310	320	378	419
Chauvin	V	7	269	343	340	395
Chinook	V	4	176	142	116	114
Chipman	V	10	284	240	180	174
Claresholm	T	3	1,156	1,265	1,608	2,143
Clive	V	8	215	224	241	251
Cluny	V	5	134	138	202	174
Clyde	V	13	186	160	219	259
Coaldale	T	2	251	290	806	2,592
Cochrane	V	6	293	298	530	857
Cold Lake	T	12	-	-	-	1,307
Coleman	T	9	1,704	1,870	1,961	1,713
Consort	V	4	299	265	396	557
Coronation	T	7	738	581	738	864
Coutts	V	2	-	-	-	469
Cowley	V	3	151	125	119	127
Craigmyle	V	5	236	186	136	107
Cremona	V	6	-	-	-	221
Crossfield	V	6	321	409	443	593
Crystal Springs	V	11	-	-	-	13
Czar	V	7	140	139	123	196
Daysland	T	7	404	438	475	539
Delburne	V	8	193	308	395	450
Delia	V	5	286	315	278	287
Derwent	V	10	107	171	233	281
Devon	T	11	-	-	842	1,418
Dewberry	V	10	-	-	-	179
Didsbury	T	6	801	892	1,180	1,254
Donalda	V	7	169	206	318	289
Donnelly	V	15	-	-	-	289
Drayton Valley	T	11	-	-	-	3,854
Drumheller	C	5	2,987	2,748	2,601	2,931
Duchess	V	2	114	149	258	218
Eckville	V	8	169	135	379	580
Edberg	V	10	131	132	188	179
Edgerton	V	7	189	258	309	295
Edmonton	C	11	79,197	93,817	159,631	281,027
Edmonton Beach	V	11	-	-	-	20
Edson	T	14	1,547	1,499	1,956	3,198
Elk Point	V	12	-	307	453	692
Elnora	V	8	153	195	211	214
Empress	V	4	314	341	411	405
Entwistle	V	11	189	218	-	411
Evansburg	V	14	-	-	-	452
Fairview	T	15	260	432	929	1,506
Falher	T	15	253	244	575	741
Ferintosh	V	10	161	169	205	174



City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961
Foremost	V	1	-	-	375	561
Forestburg	V	7	291	231	443	677
Forest Lawn	T	6	-	899	1, 079	12, 263
Fort Assiniboine	V	13	-	-	-	216
Fort Macleod	T	3	1, 447	1, 912	1, 860	2, 490
Fort Saskatchewan	T	11	1, 001	903	1, 076	2, 972
Frank	V	9	268	204	239	223
Gadsby	V	7	144	141	128	98
Galahad	V	7	150	145	198	231
Gibbons	V	11	-	-	-	192
Girouxville	V	15	-	-	-	318
Gleichen	T	5	514	435	430	426
Glendon	V	12	-	-	-	315
Glenwood	V	3	-	-	-	274
Grande Centre	T	12	-	-	-	1, 493
Grande Prairie	C	15	1, 464	1, 724	2, 664	8, 352
Granum	T	3	329	238	327	290
Grassy Lake	V	2	-	-	167	274
Grimshaw	T	15	137	169	564	1, 095
Gull Lake	V	8	-	21	32	40
Hairy Hill	V	10	-	-	205	173
Halkirk	V	7	160	118	148	172
Hanna	T	4	1, 490	1, 622	2, 027	2, 645
Hardisty	T	7	428	457	536	582
Hay Lakes	V	10	125	154	231	233
Heisler	V	7	125	-	-	214
High Prairie	T	15	-	-	1, 141	1, 756
High River	T	6	1, 459	1, 430	1, 888	2, 276
Hill Spring	V	3	-	-	-	243
Hines Creek	V	15	-	-	-	398
Hinton	T	14	-	-	-	3, 529
Holden	V	10	230	361	504	556
Hughenden	V	7	191	164	218	294
Hussar	V	5	151	116	120	213
Hythe	V	15	278	247	342	449
Innisfail	T	8	1, 024	1, 223	1, 417	2, 270
Innisfree	V	10	227	253	287	291
Irma	V	7	196	273	369	425
Irricana	V	6	161	172	180	167
Irvine	T	1	234	240	224	240
Island Lake	V	13	-	-	-	12
Itaska Beach	V	11	-	-	-	2
Jasper Place	T	11	-	-	9, 139	30, 530
Kapasiwin	V	11	-	-	-	2
Killam	V	7	326	347	465	552
Kinuso	V	15	-	-	238	323
Kitscoty	V	10	280	234	235	326
Lac La Biche	T	12	313	517	905	1, 314
Lacombe	T	8	1, 259	1, 603	2, 277	3, 029
Lakeview	V	11	-	-	15	12

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961
Lamont	V	10	507	438	637	705
Lavoy	V	10	151	178	122	131
Leduc	T	11	900	871	1,842	2,356
Legal	V	11	350	462	523	524
Lethbridge	C	2	13,489	14,612	22,947	35,454
Lloydminster	C	10	539	572	1,706	2,944
Lodgepole	T	11	-	-	-	508
Lomond	V	5	176	129	153	244
Lougheed	V	7	218	195	186	217
Magrath	T	3	1,224	1,207	1,320	1,338
Ma-Me-O-Beach	V	11	-	-	98	142
Manning	T	15	-	-	-	896
Mannville	V	10	307	396	528	632
Marwayne	V	10	-	-	-	379
Mayerthorpe	T	13	159	217	472	663
McLennan	T	15	-	-	1,074	1,078
McMurray	T	12	-	-	926	1,186
Medicine Hat	C	1	10,300	10,571	16,364	24,484
Milk River	T	2	350	335	481	801
Millet	V	11	300	325	402	403
Milo	V	5	135	129	141	167
Minburn	V	10	119	129	186	164
Mirror	V	8	534	570	635	577
Montgomery	T	6	-	-	-	5,077
Morinville	T	11	570	580	892	935
Morrin	V	5	149	216	226	316
Mundare	T	10	832	756	596	603
Munson	V	5	164	139	78	82
Myrnam	V	10	131	216	388	441
Nampa	V	15	-	-	-	271
Nanton	T	3	739	718	934	1,054
New Norway	V	10	142	169	258	263
New Sarepta	V	11	-	-	-	184
Nobleford	V	2	143	111	255	309
Okotoks	T	6	760	591	767	1,043
Olds	T	6	1,056	1,337	1,617	2,433
Onoway	V	13	149	156	189	302
Oyen	V	4	401	326	433	780
Peace River	T	15	864	873	1,672	2,543
Penhold	V	8	125	183	174	319
Picture Butte	T	2	-	-	865	978
Pincher Creek	T	3	1,024	994	1,456	2,961
Point Alison	V	11	-	-	-	6
Ponoka	T	8	836	1,306	2,574	3,938
Provost	T	7	533	518	676	1,022
Radway	V	13	-	-	184	183
Raymond	T	2	1,849	2,089	2,279	2,362
Redcliff	T	1	1,192	1,111	1,538	2,221
Red Deer	C	8	2,662	3,448	7,575	19,612
Redwater	T	13	-	-	1,306	1,135



City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961
Rimbey	T	8	304	410	757	1, 266
Rochon Sands	V	7	-	-	-	28
Rockyford	V	5	194	201	246	288
Rocky Mountain House	T	8	646	800	1, 147	2, 360
Rosemary	V	2	-	-	-	210
Rumsey	V	5	83	90	110	123
Rycroft	V	15	-	-	372	500
Ryley	V	10	236	323	406	469
St. Albert	T	11	825	697	1, 129	4, 059
St. Paul	T	12	938	1, 018	1, 407	2, 823
Sandy Beach	V	13	-	-	-	4
Sangudo	V	13	-	173	269	325
Seba Beach	V	11	41	84	103	113
Sedgewick	V	7	338	320	485	655
Sexsmith	V	15	304	325	331	531
Silver Beach	V	11	-	-	-	14
Slave Lake	V	15	-	-	-	468
Smoky Lake	V	12	366	430	491	626
Spirit River	T	15	232	276	553	890
Spruce Grove	V	11	76	-	-	465
Standard	V	5	218	212	237	266
Stavely	T	3	303	273	327	349
Stettler	T	7	1, 219	1, 295	2, 442	3, 638
Stirling	V	2	376	437	520	468
Stony Plain	T	11	497	566	878	1, 311
Strathmore	T	5	523	560	704	924
Strome	V	7	172	233	276	311
Sundre	T	6	-	-	337	853
Sunset Point	V	13	-	-	-	14
Swan Hills	T	15	-	-	-	643
Sylvan Lake	T	8	416	805	985	1, 381
Taber	T	2	1, 279	1, 331	3, 042	3, 951
Thorhild	V	13	-	-	248	312
Thorsby	V	11	-	-	385	491
Three Hills	T	5	581	706	1, 026	1, 491
Tilley	V	2	-	193	259	257
Tofield	T	10	497	551	692	905
Trochu	V	5	506	480	630	671
Turner Valley	V	6	656	676	719	702
Two Hills	T	10	149	210	525	826
Valleyview	T	15	-	-	-	1, 077
Vauxhall	T	2	-	-	393	942
Vegreville	T	10	1, 659	1, 696	2, 223	2, 908
Vermilion	T	10	1, 270	1, 408	1, 982	2, 449
Veteran	V	4	180	190	206	239
Viking	T	10	492	491	683	1, 043
Vilna	V	12	151	311	378	400
Vulcan	T	5	803	732	1, 040	1, 310
Wainwright	T	7	1, 147	980	1, 996	3, 351
Wanham	V	15	-	-	-	251

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961
Warburg	V	11	-	-	-	285
Warner	V	2	342	296	422	472
Warspite	V	12	-	-	-	153
Waskatenau	V	12	-	237	239	305
Wembley	V	15	183	188	251	303
Westlock	T	13	536	590	1, 111	1, 838
Wetaskiwin	C	11	2, 125	2, 318	3, 824	5, 300
Whitecourt	V	14	-	-	-	1, 054
Wildwood	V	14	-	-	405	479
Willingdon	V	10	250	420	281	429
Youngstown	V	4	372	188	352	321



*Large sheets of plastic become custom items at this Edmonton plant.*



TABLE 79. POPULATION—RELIGIOUS DENOMINATIONS—BY CENSUS DIVISIONS—ALBERTA, 1961

CENSUS DIVISIONS	ANGELICAN CHURCH OF CANADA										OTHER										TOTAL									
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1 .....	224	3,737	1,901	323	41	45	52	1,749	144	197	140	6,065	259	526	635	2,618	7,760	151	120	10,357	2,096	39,140								
% OF TOTAL	.57	9.55	4.86	.83	.10	.11	.13	4.47	.37	.50	.36	15.50	.66	1.34	1.62	6.69	19.63	.39	.31	26.46	5.35	100%								
2 .....	168	7,054	1,657	1,829	74	275	1,796	771	953	468	234	6,047	4,974	9,281	633	3,554	17,367	243	1,029	21,873	3,026	83,306								
% OF TOTAL	.20	8.47	1.99	2.19	.09	.33	2.16	.93	1.14	.56	.28	7.26	5.97	11.14	.76	4.27	20.85	.29	1.23	26.26	3.63	100%								
3 .....	21	3,080	427	303	20	46	59	16	126	97	6	1,647	1,229	6,478	367	708	6,387	65	52	8,801	1,032	30,967								
% OF TOTAL	.07	9.95	1.38	.98	.06	.15	.19	.05	.41	.31	.02	5.32	3.97	20.92	1.18	2.29	20.62	.21	.17	28.42	3.33	100%								
4 .....	115	1,498	210	6	20	245	3	214	175	59	—	1,714	342	82	345	239	2,682	43	63	6,388	577	15,020								
% OF TOTAL	.77	9.97	1.40	.04	.13	1.63	.02	1.42	1.17	.39	—	11.41	2.28	.54	2.30	1.59	17.86	.29	.42	42.53	3.84	100%								
5 .....	343	3,769	2,046	58	21	193	10	626	411	125	54	3,676	1,677	335	331	1,407	6,629	144	169	14,649	1,442	38,115								
% OF TOTAL	.90	9.89	5.37	.15	.06	.51	.03	1.64	1.08	.33	.14	9.64	4.40	.88	.87	3.69	17.39	.38	.44	38.43	3.78	100%								
6 .....	1,030	51,175	13,038	1,352	636	833	304	1,346	2,887	1,319	2,884	23,887	2,339	4,441	3,282	17,159	59,045	1,070	1,645	115,452	12,865	317,989								
% OF TOTAL	.32	16.09	4.10	.42	.20	.26	.10	.42	.91	.41	.91	7.51	.74	1.40	1.03	5.40	18.57	.34	.52	36.31	4.04	100%								
7 .....	207	4,102	1,096	8	13	69	31	248	208	143	2	4,877	323	252	699	1,314	8,241	22	274	17,245	1,463	40,837								
% OF TOTAL	.51	10.04	2.68	.02	.03	.17	.08	.61	.51	.35	.01	11.94	.79	.62	1.71	3.22	20.18	.05	.67	42.23	3.58	100%								
8 .....	992	8,521	3,185	1,654	45	166	23	126	507	382	32	8,223	356	500	1,091	7,960	10,286	160	252	27,612	4,460	76,533								
% OF TOTAL	1.30	11.13	4.16	2.16	.06	.22	.03	.16	.66	.50	.04	10.74	.47	.65	1.43	10.40	13.44	.21	.33	36.08	5.83	100%								
9 .....	23	2,800	289	63	40	12	25	22	427	75	7	843	54	198	104	973	5,992	39	176	7,268	844	20,274								
% OF TOTAL	.11	13.81	1.43	.31	.20	.06	.12	.11	2.11	.37	.03	4.16	.27	.98	.51	4.80	29.55	.19	.87	35.85	4.16	100%								
10 .....	364	5,170	1,255	10	82	78	10	224	9,308	448	91	9,100	1,136	95	386	1,268	10,944	118	10,356	17,568	2,166	70,177								
% OF TOTAL	.52	7.37	1.79	.01	.12	.11	.01	.32	13.26	.64	.13	12.97	1.62	.13	.55	1.21	15.59	.17	14.76	25.03	3.09	100%								
11 .....	994	47,760	14,218	4,442	630	515	154	561	19,471	2,768	2,541	42,625	641	2,733	4,735	14,433	96,001	944	12,897	125,344	16,272	410,679								
% OF TOTAL	.24	11.63	3.46	1.08	.15	.13	.04	.14	4.74	.67	.62	10.38	.16	.67	1.15	3.51	23.38	.23	3.14	30.52	3.96	100%								
12 .....	92	2,885	731	3	45	21	12	84	6,050	165	14	1,122	31	185	563	368	22,208	29	3,276	8,486	940	47,310								
% OF TOTAL	.19	6.10	1.55	.01	.09	.04	.03	.18	12.79	.35	.03	2.37	.06	.39	1.19	.78	46.94	.06	6.92	17.94	1.99	100%								
13 .....	102	4,435	520	669	33	22	14	87	3,579	409	6	4,964	217	117	972	673	11,615	19	2,981	12,482	1,515	45,431								
% OF TOTAL	.22	9.76	1.15	1.47	.07	.05	.03	.19	7.88	.90	.01	10.93	.48	.26	2.14	1.48	25.57	.04	6.56	27.48	3.33	100%								
14 .....	45	2,146	371	318	38	26	2	10	735	271	18	1,854	114	112	277	461	4,786	14	444	6,645	595	19,282								
% OF TOTAL	.23	11.13	1.93	1.65	.20	.13	.01	.05	3.81	1.41	.09	9.62	.59	.58	1.44	2.39	24.82	.07	2.30	34.46	3.09	100%								
15 .....	467	8,498	1,486	114	45	142	30	77	2,372	597	16	5,876	2,577	202	692	2,202	28,798	258	1,526	18,757	2,152	76,884								
% OF TOTAL	.61	11.05	1.93	.15	.06	.18	.04	.10	3.09	.78	.02	7.64	3.35	.26	.90	2.86	37.46	.34	1.98	24.40	2.80	100%								
TOTAL.....	5,187	156,630	42,430	11,152	1,783	2,688	2,525	6,161	47,353	7,523	6,045	122,520	16,269	25,537	15,112	55,337	298,741	3,319	35,260	418,927	51,445	1,331,944								
% OF TOTAL	.39	11.76	3.19	.84	.13	.20	.19	.46	3.56	.56	.45	9.20	1.22	1.92	1.13	4.16	22.43	.25	2.65	31.45	3.86	100%								

TABLE 80. BIRTHPLACE OF ALBERTA POPULATION BY CENSUS DIVISION - 1961

CENSUS DIVISION NO.	NEW FOUND- LAND	PRINCE EDWARD ISLAND	NOVA SCOTIA	NEW BRUNS- WICK	QUEBEC	ONTARIO	MANITOBA	SASKAT- EWAN	ALBERTA	BRITISH COLUMBIA	YUKON AND NORTHWEST TERRITORIES	TOTAL CANADA
1. PER CENT OF TOTAL	NO. %	56 0.14	212 0.54	100 0.26	140 0.36	1,045 2.67	865 2.21	5,280 13.49	21,971 56.13	484 1.24	16 0.04	30,193 77.14
2. PER CENT OF TOTAL	NO. %	66 0.08	371 0.45	166 0.20	312 0.37	2,051 2.46	1,657 1.99	6,174 7.41	47,287 56.76	2,147 2.59	31 0.04	60,311 72.40
3. PER CENT OF TOTAL	NO. %	45 0.15	156 0.50	64 0.21	141 0.46	853 2.75	403 1.30	1,439 4.65	22,330 72.11	511 1.65	10 0.03	25,959 83.83
4. PER CENT OF TOTAL	NO. %	21 0.14	54 0.36	27 0.18	64 0.43	550 3.66	245 1.63	1,369 9.11	9,731 64.79	147 0.98	5 0.03	12,218 81.34
5. PER CENT OF TOTAL	NO. %	66 0.17	220 0.58	86 0.23	208 0.54	1,188 3.12	738 1.94	2,102 5.51	24,965 65.50	532 1.39	14 0.04	30,134 79.06
6. PER CENT OF TOTAL	NO. %	910 0.29	3,146 0.99	1,722 0.54	3,466 1.09	18,377 5.78	13,516 4.25	30,957 9.73	159,273 50.09	9,842 3.09	221 0.07	241,904 76.07
7. PER CENT OF TOTAL	NO. %	72 0.18	190 0.47	126 0.31	309 0.76	1,657 4.06	618 1.51	2,589 6.34	27,477 67.28	459 1.12	21 0.05	33,532 82.11
8. PER CENT OF TOTAL	NO. %	122 0.16	398 0.52	234 0.31	452 0.59	3,042 3.98	1,686 2.20	5,295 6.92	49,143 64.21	1,601 2.09	47 0.06	62,075 81.11
9. PER CENT OF TOTAL	NO. %	36 0.18	288 1.42	108 0.53	205 1.01	696 3.43	590 2.91	1,217 6.00	10,986 54.19	794 3.92	14 0.07	14,957 73.77
10. PER CENT OF TOTAL	NO. %	55 0.08	205 0.29	66 0.09	288 0.41	1,603 2.28	843 1.20	6,012 8.57	47,010 66.99	567 0.81	18 0.03	56,679 80.77
11. PER CENT OF TOTAL	NO. %	731 0.18	2,743 0.67	1,529 0.37	4,561 1.11	16,666 4.06	13,060 3.18	28,905 7.04	240,651 58.60	8,424 2.05	801 0.19	318,519 77.56
12. PER CENT OF TOTAL	NO. %	70 0.15	389 0.82	297 0.63	1,497 3.16	1,595 3.37	646 1.37	2,105 4.45	33,357 70.51	790 1.67	134 0.28	40,943 86.54
13. PER CENT OF TOTAL	NO. %	62 0.14	136 0.30	62 0.13	353 0.78	977 2.15	477 1.05	1,503 3.31	30,938 68.10	462 1.01	26 0.06	35,013 77.07
14. PER CENT OF TOTAL	NO. %	31 0.16	93 0.48	78 0.40	296 1.54	683 3.54	453 2.35	1,800 9.33	11,185 56.01	577 2.99	13 0.07	15,226 78.96
15. PER CENT OF TOTAL	NO. %	68 0.09	261 0.34	202 0.26	1,915 2.49	1,931 2.51	2,116 2.75	5,450 7.09	51,730 67.28	1,737 2.26	102 0.13	65,532 85.23
ALBERTA TOTAL PER CENT OF TOTAL	NO. %	2,411 0.18	8,862 0.67	4,867 0.37	14,207 1.07	52,914 3.97	37,913 2.85	102,197 7.67	788,034 59.16	29,074 2.18	1,473 0.11	1,043,195 78.32



BIRTHPLACE OF ALBERTA POPULATION BY CENSUS DIVISION - 1961 (CONTINUED)

CENSUS DIVISION NO.	UNITED KINGDOM	OTHER BRITISH COMMONWEALTH COUNTRIES	UNITED STATES	EUROPEAN COUNTRIES	ASIATIC COUNTRIES	OTHER COUNTRIES	TOTAL
1. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	1,917 4.90	30 0.08	1,928 4.92	4,883 12.47	155 0.40	34 0.09	39,140 100%
2. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	3,943 4.73	154 0.18	4,329 5.20	13,545 16.26	910 1.09	114 0.14	83,306 100%
3. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	1,088 3.51	42 0.14	2,152 6.95	1,630 5.26	91 0.29	5 0.02	30,967 100%
4. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	695 4.63	19 0.13	926 6.16	1,108 7.38	46 0.31	8 0.05	15,020 100%
5. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	1,830 4.80	59 0.16	2,582 6.78	3,320 8.71	165 0.43	25 0.06	38,115 100%
6. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	26,455 8.32	937 0.30	12,433 3.91	34,095 10.72	1,880 0.59	285 0.09	317,989 100%
7. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	2,006 4.91	45 0.11	2,588 6.34	2,576 6.31	84 0.21	6 0.01	40,837 100%
8. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	4,213 5.50	107 0.14	4,243 5.54	5,616 7.34	242 0.32	37 0.05	76,533 100%
9. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	1,495 7.37	74 .37	564 2.78	3,058 15.09	116 0.57	10 0.05	20,274 100%
10. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	2,516 3.58	44 0.06	2,749 3.92	8,017 11.42	138 0.20	34 0.05	70,177 100%
11. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	24,527 5.97	878 0.21	10,747 2.62	53,917 13.13	1,840 0.45	251 0.06	410,679 100%
12. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	916 1.94	47 0.10	1,079 2.28	4,120 8.71	191 0.40	14 0.03	47,310 100%
13. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	1,634 3.60	28 0.06	1,879 4.19	6,802 14.97	62 0.14	13 0.03	45,431 100%
14. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	753 3.91	34 0.18	648 3.36	2,571 13.33	31 0.16	19 0.10	19,282 100%
15. PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	2,136 2.78	69 0.09	2,653 3.45	6,139 7.99	169 0.22	186 0.24	76,884 100%
ALBERTA TOTAL PER CENT OF TOTAL	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %	NO. %
	76,124 5.71	2,567 0.19	51,500 3.87	151,397 11.37	6,120 0.46	1,041 0.08	1,331,944 100%

TABLE 81. POPULATION BY RACIAL ORIGIN FOR CENSUS DIVISIONS

CENSUS DIVISION	TOTAL	OTHER EUROPEAN								
		BRITISH ISLES ORIGINS <sup>1</sup>	FRENCH	AUSTRIAN N.O.S.	CZECH AND SLOVAK	FINNISH	GERMAN	HUNGARIAN	ITALIAN	JEWISH
1	39,140	14,138	952	279	205	52	14,029	320	290	119
2	83,306	32,821	1,901	835	2,676	169	12,865	3,603	1,389	148
3	30,967	15,207	1,148	153	275	46	3,740	269	175	7
4	15,020	7,070	397	79	92	12	3,360	54	13	1
5	38,115	17,719	1,392	274	445	120	6,377	544	416	50
6	317,989	183,340	12,473	3,173	2,139	601	37,638	4,710	5,133	1,882
7	40,837	20,052	1,871	295	292	31	8,199	222	76	2
8	76,533	41,923	2,850	406	568	1,081	9,423	640	345	37
9	20,274	8,828	793	281	1,105	99	1,503	313	1,337	9
10	70,177	21,880	1,979	1,459	432	24	7,755	285	62	101
11	410,679	180,568	28,836	6,581	2,571	894	57,912	3,292	4,894	1,944
12	47,310	9,964	11,642	532	280	116	2,030	106	281	14
13	45,431	14,414	3,792	564	608	244	7,644	298	201	2
14	19,282	7,819	1,708	170	173	67	2,831	114	212	20
15	76,884	26,012	11,585	823	587	106	8,008	523	201	17
ALBERTA TOTAL	1,331,944	601,755	83,319	15,904	12,448	3,662	183,314	15,293	15,025	4,353
PERCENT OF TOTAL (%)	100.0	45.18	6.26	1.19	.93	.28	13.76	1.15	1.13	.33
CALGARY	249,641	147,030	9,528	2,673	1,728	510	26,917	4,168	4,720	1,856
EDMONTON	281,027	129,977	17,246	4,537	1,748	547	34,385	2,225	4,425	1,767
FOREST LAWN	12,263	5,138	651	135	147	22	2,471	197	167	9
JASPER PLACE	30,530	13,460	2,675	418	171	100	4,142	271	156	119
LETHBRIDGE	35,454	17,193	878	502	1,099	69	3,284	1,497	897	128
MEDICINE HAT	24,484	9,542	646	157	111	22	8,752	179	199	119
RED DEER	19,612	11,048	954	138	111	110	2,178	162	142	18

(1) INCLUDES ENGLISH, IRISH, SCOTTISH, WELSH AND MANX.

TABLE 82. POPULATION BY OFFICIAL LANGUAGE AND MOTHER TONGUE FOR ALBERTA RURAL

OFFICIAL LANGUAGE										
	TOTAL	ENGLISH				NEITHER ENGLISH				
		ENGLISH ONLY	FRENCH ONLY	ENGLISH AND FRENCH	NOR FRENCH	ENGLISH	FRENCH	CHINESE	FINNISH	GAELIC
ALBERTA TOTAL	1,331,944	1,253,824	5,534	56,920	15,666	962,319	42,276	5,774	1,905	463
RURAL	488,733	454,171	3,481	22,151	8,930	315,948	21,026	581	1,038	131
FARM	285,823	267,356	2,331	12,573	3,563	180,317	12,916	59	687	72
NON-FARM	202,910	186,815	1,150	9,578	5,367	135,631	8,110	522	351	59
URBAN	843,211	799,653	2,053	34,769	6,736	646,371	21,250	5,193	867	332
100,000 AND OVER	605,342	573,401	1,315	25,693	4,933	462,698	14,569	3,526	579	226
30,000 - 99,000	35,454	34,390	24	647	393	27,239	256	264	24	12
10,000 - 29,999	44,096	42,987	40	809	260	33,894	448	356	53	28
5,000 - 9,999	23,535	22,769	49	609	108	18,206	436	191	17	6
2,500 - 4,999	62,843	58,539	353	3,374	577	47,752	2,657	413	39	37
1,000 - 2,499	71,941	67,567	272	3,637	465	56,582	2,884	443	155	23
DIVISION NO. 1	39,140	38,325	32	515	268	26,759	254	176	36	16
2	83,306	80,765	54	1,231	1,256	57,213	539	452	73	23
3	30,967	29,972	38	573	384	22,883	378	91	14	7
4	15,020	14,786	11	189	34	11,894	104	57	7	1
5	38,115	36,972	67	759	317	29,004	540	165	66	7
6	317,989	305,664	413	9,841	2,071	262,691	4,001	2,026	231	90
7	40,837	39,714	83	955	85	34,158	751	106	16	12
8	76,533	74,673	75	1,286	499	64,370	791	300	672	38
9	20,274	19,022	37	844	371	14,173	370	129	42	8
10	70,177	67,685	81	1,057	1,354	40,043	751	166	15	32
11	410,679	384,166	1,447	21,405	3,661	291,354	15,243	1,694	452	172
12	47,310	35,241	1,323	8,368	2,378	19,327	8,564	105	76	6
13	45,431	42,535	147	2,043	706	27,899	1,720	58	141	22
14	19,282	18,063	109	900	210	14,055	735	39	33	8
15	76,884	66,241	1,617	6,954	2,072	46,496	7,535	210	31	21



AND INCORPORATED CITIES OF 10,000 AND OVER - ALBERTA, 1961

EUROPEAN ORIGINS						ASIATIC ORIGINS			OTHER ORIGINS		
NETHERLANDS	POLISH	RUSSIAN	SCANDINAVIAN <sup>2</sup>	UKRAINIAN	OTHER	CHINESE	JAPANESE	OTHER	INDIAN AND ESKIMO	NEGRO	OTHER AND NOT STATED
1,329	745	1,791	2,295	665	998	193	87	31	49	3	570
7,131	1,958	1,475	6,572	2,494	2,448	620	2,601	45	665	4	886
1,199	337	817	2,820	340	322	109	101	7	3,789	4	102
345	517	612	1,507	523	254	70	5	21	39	—	49
1,994	713	903	3,787	872	542	202	16	14	1,548	7	180
13,098	6,169	5,018	19,193	8,511	5,659	2,407	492	485	976	327	4,565
1,156	870	618	5,167	1,005	651	114	—	8	33	2	173
3,871	1,135	818	8,225	1,543	1,165	358	25	23	1,460	29	608
470	988	257	995	849	622	151	41	16	1,381	1	235
1,370	3,615	494	8,583	20,332	1,104	182	13	8	137	12	350
16,140	15,419	3,651	23,810	43,601	8,107	2,070	298	862	3,701	643	4,885
447	1,975	232	1,978	10,849	590	119	3	228	5,547	17	360
1,576	3,001	341	2,902	7,540	725	65	15	26	1,055	202	216
905	714	244	1,651	1,520	632	41	17	31	215	48	150
4,499	2,383	681	6,394	5,279	1,148	236	7	40	7,959	8	388
55,530	40,539	17,952	95,879	105,923	24,967	6,937	3,721	1,845	28,554	1,307	13,717
4.17	3.04	1.35	7.20	7.95	1.87	.52	.28	.14	2.14	.10	1.03
8,682	5,106	3,584	13,983	7,075	4,621	2,232	456	445	335	233	3,759
9,953	11,197	2,276	14,526	32,526	5,891	1,805	230	712	995	491	3,568
761	417	324	788	487	284	35	11	4	16	29	170
1,879	899	334	2,112	2,437	494	97	18	67	140	75	466
1,837	1,037	448	2,165	1,358	1,035	413	838	33	22	2	719
659	415	869	1,066	478	559	171	36	30	15	3	456
1,094	300	170	1,666	634	297	214	6	7	49	4	310

(2) INCLUDES DANISH, ICELANDIC, NORWEGIAN AND SWEDISH.

FARM, RURAL NON-FARM AND URBAN BY SIZE GROUPS AND FOR CENSUS DIVISIONS, 1961

MOTHER TONGUE												
GERMAN	INDIAN AND ESKIMO	ITALIAN	JAPANESE	MAGYAR	NETHERLANDS	POLISH	RUSSIAN	SCANDINAVIAN	SLOVAK	UKRAINIAN	YIDDISH	OTHER
97,666	27,928	9,881	2,108	9,397	— 24,640	16,755	3,675	25,603	5,725	83,923	1,764	10,142
40,411	26,230	1,146	903	2,840	7,898	6,871	1,313	12,207	2,782	44,330	154	2,924
30,327	5,026	456	572	1,739	5,207	4,696	800	7,861	1,786	31,430	77	1,795
10,084	21,204	690	331	1,101	2,691	2,175	513	4,346	996	12,900	77	1,129
57,255	1,698	8,735	1,205	6,557	16,742	9,884	2,362	13,396	2,943	39,593	1,610	7,218
39,150	962	6,991	355	4,734	12,644	7,446	1,789	8,892	1,598	32,163	1,458	5,562
1,576	10	572	510	938	1,043	565	132	401	523	924	52	413
6,312	26	168	22	155	901	206	88	597	99	533	28	182
1,820	46	47	3	87	314	250	71	1,296	35	620	8	82
4,558	129	274	203	380	947	543	102	993	204	3,073	33	506
3,839	525	683	112	263	893	874	180	1,217	484	2,280	31	473
9,311	37	147	47	159	648	238	95	523	111	372	24	187
9,013	547	842	1,587	2,437	3,509	1,090	274	1,380	1,595	1,675	72	985
2,168	3,683	76	33	111	459	141	127	447	120	158	3	68
1,873	30	4	2	20	65	178	42	390	22	281	4	46
2,956	1,497	203	12	353	787	287	189	1,027	195	657	20	150
18,314	526	3,506	235	3,218	5,883	2,410	1,069	5,057	817	4,676	777	2,462
2,733	23	30	—	62	234	301	66	1,561	50	575	5	154
2,994	1,363	144	13	237	1,674	336	145	2,132	151	771	13	389
683	1,365	783	13	181	216	544	136	259	533	533	11	295
3,758	129	40	9	93	285	1,280	123	2,804	160	19,866	46	577
32,853	2,852	3,662	140	2,020	8,829	6,303	988	6,500	1,063	32,166	716	3,672
617	6,319	139	3	42	76	941	67	448	118	10,039	32	391
4,080	1,057	87	9	129	551	1,421	88	746	332	6,868	12	211
1,269	203	113	5	67	439	267	89	417	141	1,148	14	240
5,044	8,297	105	—	268	985	1,018	177	1,912	317	4,138	15	315

TABLE 83. POPULATION BY AGE GROUPS - ALBERTA, 1901-1961

AGE GROUPS (YEARS)	1901		1911		1921		1931		1941		1951		1961	
	NO.	PERCENT OF TOTAL	NO.	PERCENT OF TOTAL	NO.	PERCENT OF TOTAL	NO.	PERCENT OF TOTAL	NO.	PERCENT OF TOTAL	NO.	PERCENT OF TOTAL	NO.	PERCENT OF TOTAL
0-1 .....	2,039	2.79	10,187	2.72	14,931	2.54	15,156	2.07	15,208	1.91	24,784	2.64	37,801	2.84
1 .....	2,219	3.04	9,463	2.53	15,954	2.71	15,214	2.08	14,543	1.83	23,837	2.54	37,354	2.80
2 .....	2,198	3.01	9,867	2.64	15,570	2.65	16,164	2.21	15,456	1.94	22,852	2.43	36,308	2.73
3 .....	2,185	2.99	9,683	2.59	15,932	2.70	15,851	2.17	15,133	1.90	23,320	2.48	35,378	2.66
4 .....	2,201	3.02	9,179	2.45	16,171	2.75	15,987	2.18	14,561	1.83	22,053	2.35	33,047	2.48
UNDER 5	10,842	14.85	48,379	12.93	78,558	13.35	78,372	10.71	74,901	9.41	116,846	12.44	179,888	13.51
5-9 .....	9,740	13.34	39,510	10.56	75,830	12.89	81,104	11.09	75,848	9.53	93,063	9.91	159,053	11.94
10-14 .....	7,828	10.72	32,340	8.64	59,251	10.07	79,484	10.86	77,703	9.76	76,897	8.18	130,383	9.79
15-19 .....	6,780	9.28	30,983	8.28	48,659	8.27	74,151	10.14	78,358	9.84	73,941	7.87	99,004	7.43
20-24 .....	6,637	9.09	42,240	11.29	44,744	7.60	65,098	8.89	73,614	9.25	75,527	8.04	89,154	6.69
25-29 .....	6,311	8.64	44,509	11.89	49,040	8.33	57,936	7.92	65,520	8.23	76,715	8.16	95,730	7.19
30-34 .....	5,806	7.95	36,483	9.75	51,963	8.93	50,834	6.95	57,018	7.16	71,951	7.66	96,841	7.27
35-39 .....	5,151	7.05	27,622	7.38	50,514	8.58	50,071	6.84	53,139	6.67	66,509	7.08	91,693	6.88
40-44 .....	4,275	5.85	20,560	5.49	39,350	6.68	49,732	6.80	45,798	5.75	56,971	6.06	80,930	6.08
45-49 .....	3,058	4.19	15,169	4.05	28,503	4.84	45,024	6.15	44,123	5.54	50,146	5.34	70,274	5.28
50-54 .....	2,181	2.99	12,384	3.30	21,620	3.67	34,745	4.75	43,473	5.46	42,334	4.51	58,273	4.38
55-59 .....	1,368	1.87	7,707	2.05	14,642	2.49	22,917	3.13	37,765	4.74	37,001	3.94	48,817	3.66
60-64 .....	1,114	1.53	5,270	1.41	11,408	1.94	16,363	2.24	27,668	3.48	34,657	3.69	38,826	2.91
65-69 .....	624	0.85	2,967	0.79	6,903	1.17	11,521	1.57	18,503	2.31	29,439	3.13	31,724	2.38
70-74 .....	366	0.50	1,635	0.44	3,843	0.66	7,867	1.08	11,518	1.46	19,553	2.08	27,805	2.09
75-79 .....	179	0.25	889	0.23	1,822	0.31	3,894	0.53	6,542	0.82	10,664	1.13	19,170	1.44
80-84 .....	98	0.14	350	0.09	841	0.14	1,673	0.23	3,214	0.40	4,866	0.52	9,568	0.72
85-89 .....	22	0.03	130	0.03	302	0.05	544	0.07	1,161	0.15	1,847	0.20	3,630	0.27
90-94 .....	12	0.02	38	0.02	50	0.02	113	0.02	260	0.03	474	0.05	978	0.07
95-99 .....	9	0.01	14	0.01	19	0.01	34	0.01	43	0.01	100	0.01	203	0.02
100 AND OVER .....			3		7		10							
UNSPECIFIED AGES.....	621	0.85	5,113	1.37	585	0.10	118	0.02						
TOTAL .....	73,022	100%	374,295	100%	588,454	100%	731,605	100%	796,169	100%	939,501	100%	1,331,944	100%
PERCENTAGE OF TOTAL POPULATION														
UNDER 20 YEARS OF AGE .....	48.2%		40.4%		44.6%		42.8%		38.5%		38.4%		42.7%	
PERCENTAGE OF TOTAL POPULATION														
65 YEARS OF AGE AND OVER .....	1.8%		1.6%		2.3%		3.5%		5.2%		7.1%		7.0%	
MEDIAN AGE .....	20 YEARS		23 YEARS		23 YEARS		23 YEARS		25 YEARS		26 YEARS		24 YEARS	

MEDIANS ARE BASED ON THE DATA GROUPED IN 5 YEAR CLASS INTERVALS.



TABLE 84. POPULATION BY AGE GROUPS—URBAN AND RURAL—BY SEX—ALBERTA, 1961

AGE GROUPS (YEARS)	URBAN						RURAL						TOTAL ALBERTA					
	Male			Female			Male			Female			Male			Female		
	No.	%	PERCENT OF TOTAL URBAN	No.	%	PERCENT OF TOTAL URBAN	No.	%	PERCENT OF TOTAL RURAL	No.	%	PERCENT OF TOTAL RURAL	No.	%	PERCENT OF TOTAL ALBERTA	No.	%	PERCENT OF TOTAL ALBERTA
0-4	59,273	7.0		56,353	6.7		32,977	6.8		31,285	6.4		92,250	6.9		87,638	6.6	
			115,626			8.7			64,262			4.8			179,888			13.5
5-9	49,713	5.9		47,183	5.6		31,920	6.5		30,237	6.2		81,633	6.1		77,420	5.8	
			96,896			7.3			62,157			4.7			159,053			11.9
10-14	38,725	4.6		37,147	4.4		27,955	5.7		26,556	5.4		66,680	5.0		63,703	4.8	
			75,872			5.7			54,511			4.1			130,383			9.8
15-19	27,037	3.2		29,665	3.5		23,259	4.8		19,043	3.9		50,296	3.8		48,708	3.6	
			56,702			4.2			42,302			3.2			99,004			7.4
20-24	28,562	3.4		33,030	3.9		15,841	3.3		11,721	2.4		44,403	3.3		44,751	3.4	
			61,592			4.6			27,562			2.1			89,154			6.7
25-29	34,336	4.1		33,153	3.9		15,384	3.1		12,857	2.6		49,720	3.8		46,010	3.4	
			67,489			5.1			28,241			2.1			95,730			7.2
30-34	34,868	4.1		32,507	3.9		15,826	3.2		13,640	2.8		50,694	3.8		46,147	3.5	
			67,375			5.0			29,466			2.2			96,841			7.3
35-39	30,561	3.6		30,656	3.6		15,744	3.2		14,732	3.0		46,305	3.5		45,388	3.4	
			61,217			4.6			30,476			2.3			91,693			6.9
40-44	25,831	3.1		25,788	3.1		15,457	3.2		13,854	2.8		41,288	3.1		39,642	3.0	
			51,619			3.9			29,311			2.2			80,930			6.1
45-49	21,758	2.6		21,598	2.6		14,584	3.0		12,334	2.5		36,342	2.7		33,932	2.6	
			43,356			3.3			26,918			2.0			70,274			5.3
50-54	17,571	2.1		17,292	2.1		13,299	2.7		10,111	2.1		30,870	2.3		27,403	2.1	
			34,863			2.6			23,410			1.8			58,273			4.4
55-59	14,503	1.7		13,544	1.6		12,367	2.5		8,403	1.7		26,870	2.0		21,947	1.7	
			28,047			2.1			20,770			1.6			48,817			3.6
60-64	11,345	1.4		11,275	1.3		9,837	2.0		6,369	1.3		21,182	1.6		17,644	1.3	
			22,620			1.7			16,206			1.2			38,826			2.9
65-69	9,587	1.1		9,677	1.2		7,579	1.6		4,881	1.0		17,166	1.3		14,558	1.1	
			19,264			1.4			12,460			.9			31,724			2.4
70-74	9,211	1.1		8,677	1.0		6,202	1.3		3,715	.8		15,413	1.2		12,392	.9	
			17,888			1.3			9,917			.7			27,805			2.1
75-79	6,747	.8		6,062	.7		3,902	.8		2,459	.5		10,649	.8		8,521	.6	
			12,809			1.0			6,361			.5			19,170			1.4
80-84	3,421	.4		3,219	.4		1,749	.4		1,179	.3		5,170	.4		4,398	.3	
			6,640			.5			2,928			.2			9,568			.7
85-89	1,252	.2		1,232	.1		666	.1		480	.1		1,918	.2		1,712	.1	
			2,484			.2			1,146			.1			3,630			.3
90-94	318	-		395	-		138	-		127	-		456	-		522	-	
			713			.1			265			-			978			.1
95 AND OVER	54	-		85	-		24	-		40	-		78	-		125	-	
			139			-			64			-			203			-
TOTAL	424,673	50.4		418,538	49.6		264,710	54.2		224,023	45.8		689,383	51.8		642,561	48.2	
			843,211			63.3			488,733			36.7			1,331,944			100%



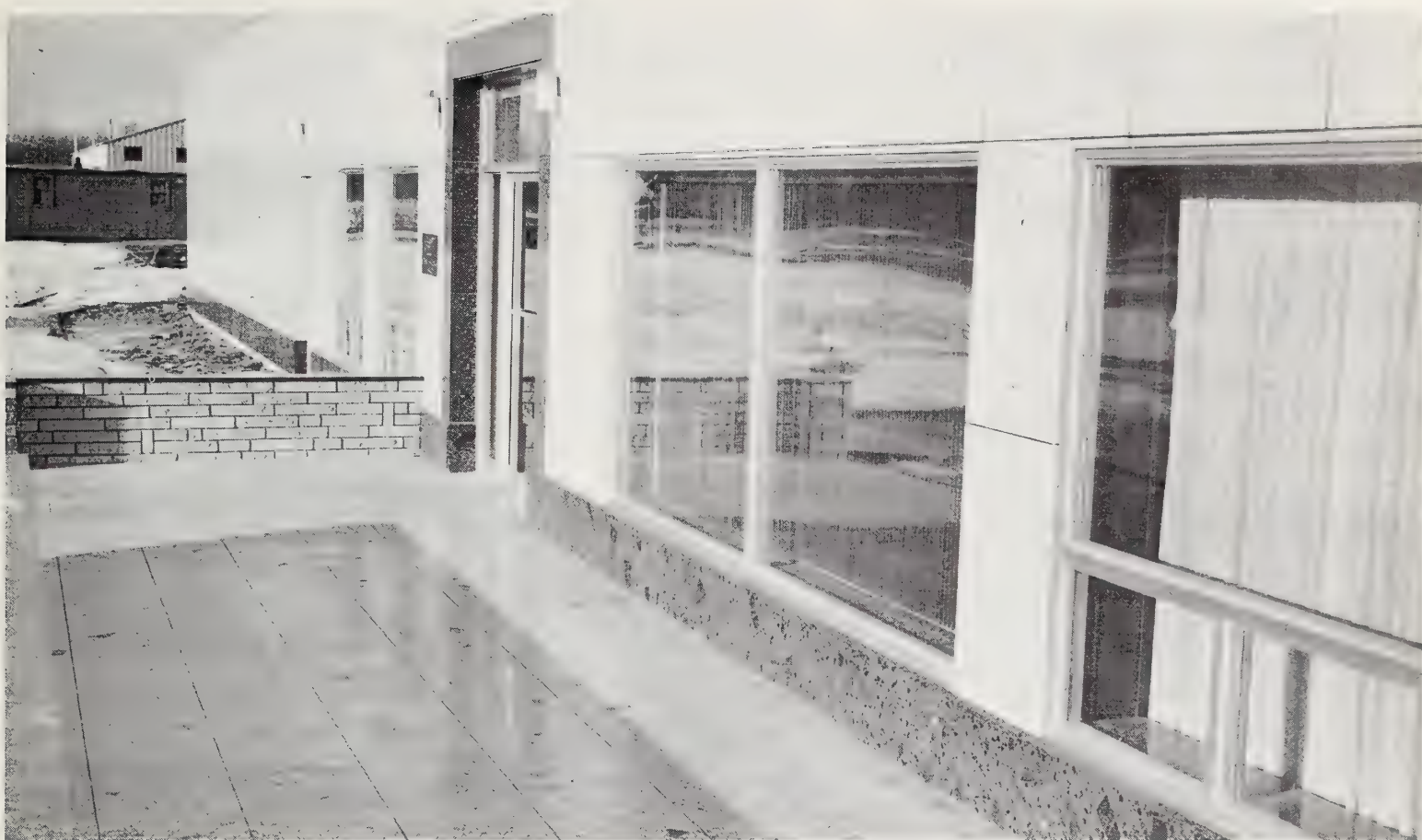




TABLE 87. FAMILIES AND NUMBER OF PERSONS PER FAMILY — RURAL AND URBAN  
BY CENSUS DIVISIONS — ALBERTA, 1961

	TOTAL FAMILIES	PERSONS IN FAMILY	AVERAGE NUMBER OF PERSONS PER FAMILY	--- NUMBER OF PERSONS IN FAMILY ---							
				2	3	4	5	6	7	8	9 +
ALBERTA	305,671	1,174,058	3.8	84,509	61,676	67,724	44,782	24,903	11,358	5,398	5,321
RURAL	105,422	437,821	4.2	25,756	19,787	21,359	15,909	10,474	5,556	3,001	3,580
FARM	62,283	263,773	4.2	13,695	12,083	12,640	9,742	6,622	3,478	1,848	2,175
NON-FARM	43,139	174,048	4.0	12,061	7,704	8,719	6,167	3,852	2,078	1,153	1,405
URBAN	200,249	736,237	3.7	58,753	41,889	46,365	28,873	14,429	5,802	2,397	1,741
CENSUS DIVISION											
1	9,539	35,302	3.7	2,861	1,912	2,120	1,417	703	306	137	83
2	19,158	75,007	3.9	5,255	3,734	4,035	2,858	1,664	826	380	406
3	6,639	27,356	4.1	1,777	1,159	1,315	998	622	332	205	231
4	3,308	13,190	4.0	891	595	676	512	341	148	83	62
5	8,646	33,998	3.9	2,421	1,574	1,863	1,233	802	382	189	182
6	76,528	277,803	3.6	22,819	16,212	18,127	10,832	5,207	1,981	777	573
7	9,269	36,628	4.0	2,625	1,656	1,913	1,367	861	425	230	192
8	16,923	66,105	3.9	4,601	3,312	3,600	2,543	1,473	726	345	323
9	4,494	16,201	3.6	1,503	899	956	601	298	125	51	61
10	16,258	62,752	3.8	4,651	3,168	3,380	2,317	1,474	692	290	286
11	95,513	361,004	3.8	25,811	20,136	22,095	14,344	7,496	3,127	1,389	1,115
12	9,510	42,452	4.5	2,058	1,740	1,827	1,318	1,000	586	410	571
13	10,211	41,105	4.0	2,722	2,008	1,948	1,533	940	522	246	292
14	4,085	16,680	4.1	984	789	871	628	383	223	94	113
15	15,590	68,475	4.4	3,530	2,782	2,998	2,281	1,639	957	572	831





*Building tiles of recreated stone are new to North America.*



*Manufacture and repair service to fire departments throughout Western Canada are available from Calgary.*

Table 88. LABOUR FORCE 15 YEARS OF AGE AND OVER - BY OCCUPATIONAL GROUP BY CENSUS DIVISION, ALBERTA, 1961

	All Occupations	Managerial	Professional & Technical	Clerical	Sales	Service and Recreational Occupations	Transportation & Communication	Farmers & Farm Workers	Loggers, Fishermen, Trappers and Hunters	Miners, Quarrymen and Related Workers	Craftsmen Production & Process Related Workers	Occupation Not Stated	
												Labourers	Stated
* Alberta 1951	353,898	26,348	23,385	29,299	22,589	35,126	26,251	115,096	- - -	(9,776)	46,383	16,783	2,862
Alberta 1961	489,511	41,691	46,579	55,317	31,629	59,055	28,261	104,162	3,009	5,291	83,449	19,615	11,453
Census Division													
1	13,540	1,100	1,247	1,119	829	1,407	902	3,066	6	43	2,914	583	324
2	30,065	2,494	2,690	2,425	2,070	2,882	1,607	9,183	13	157	4,685	1,229	630
3	9,806	702	757	424	417	928	454	3,823	19	144	1,434	389	315
4	5,275	326	313	193	189	373	266	2,791	-	46	556	106	116
5	13,054	879	857	539	498	943	512	6,324	1	375	1,588	255	283
6	122,507	12,865	13,982	20,499	10,262	17,064	7,772	7,580	79	717	23,497	5,180	3,010
7	14,097	954	886	613	563	1,282	606	6,849	2	197	1,551	310	284
8	26,125	1,999	2,155	1,555	1,397	3,444	1,289	8,598	73	490	3,653	948	524
9	8,291	688	618	669	339	1,538	685	416	307	588	1,600	668	175
10	25,904	1,610	1,627	995	994	1,705	945	14,271	14	127	2,567	606	443
11	156,267	14,237	17,621	23,873	11,984	21,371	10,446	12,314	129	1,630	31,903	6,979	3,780
12	15,728	728	955	489	374	2,742	535	7,256	356	18	1,375	446	454
13	17,086	886	788	445	452	806	595	10,436	129	179	1,586	503	281
14	6,716	549	447	379	237	667	480	980	679	225	1,411	487	175
15	25,050	1,674	1,636	1,100	1,024	1,903	1,167	10,275	1,202	355	3,129	926	659

(\*) The Alberta 1951 and 1961 occupational group totals are not strictly comparable because of slight changes in definitions; however, they are adequately comparable to serve to indicate trends.



Table 89. LABOUR FORCE 15 YEARS OF AGE AND OVER BY INDUSTRY - ALBERTA 1951 and 1961; AND FOR MAJOR CITIES 1961

	Alberta	Alberta	Calgary	Edmonton	Lethbridge	Medicine Hat	Red Deer	Others
	1951	1961			- 1961 -			
Agriculture	115,024	103,573	998	1,346	459	389	66	100,315
Forestry	1,712	2,784	76	129	4	1	7	2,567
Fishing and Trapping	976	839	12	23	1	1	-	802
Mines, Quarries and Oil Wells	15,723	17,350	6,942	2,839	90	54	248	7,177
Manufacturing	35,635	42,217	13,064	17,477	1,541	1,652	514	7,969
Construction	25,662	37,360	10,613	12,442	1,060	710	703	11,832
Transportation	26,944	42,809	10,734	13,392	1,418	961	577	15,727
Public Utilities	3,366	4,626	1,468	1,257	155	83	48	1,615
Trade	46,771	80,096	23,846	27,710	3,414	1,574	1,504	22,048
Finance, Insurance and Real Estate	7,957	14,695	5,566	5,467	551	269	282	2,560
(Non-Government Services)								
Community, Business, Personal Services	49,631	93,424	23,454	31,067	3,429	2,020	2,239	31,215
(Government Services)								
Public Administration	22,158	38,627	9,786	15,211	1,036	620	753	11,221
Industry - Unspecified or Undefined	2,339	11,111	2,697	3,216	296	214	183	4,505
TOTAL	353,898	489,511	109,256	131,576	13,454	8,548	7,124	219,553

Table 90. WAGE EARNERS, 15 YEARS OF AGE AND OVER SHOWING AVERAGE EARNINGS AND THE NUMBER OF WAGE EARNERS BY AMOUNT OF EARNINGS, ALBERTA AND CENSUS DIVISIONS, 1961

Number of Wage Earners Reporting Earnings by Income Groups								
	Total Wage Earners	-\$1,000	\$1,000-\$1,999	\$2,000-\$2,999	\$3,000-\$3,999	\$4,000-\$5,999	\$6,000+	Average Earnings
	No.	No.	No.	No.	No.	No.	No.	\$
Alberta	362,794	52,379	47,737	59,952	70,609	78,116	34,017	5,734
Census Division								
1	10,049	1,426	1,502	1,670	2,322	1,896	593	5,257
2	21,691	3,919	3,576	4,059	3,800	3,669	1,205	4,897
3	6,319	1,177	1,060	1,003	973	924	340	4,768
4	2,640	552	513	396	427	394	111	4,567
5	7,212	1,443	1,465	1,191	1,208	903	263	4,414
6	106,959	12,617	11,775	17,033	21,703	26,049	12,765	6,296
7	6,947	1,329	1,322	1,095	1,237	1,148	335	4,792
8	16,155	2,620	2,344	3,069	3,203	3,054	1,088	5,266
9	7,367	1,241	1,020	1,137	1,586	1,563	520	4,998
10	10,653	2,084	1,944	1,823	1,897	1,560	478	4,721
11	134,299	17,516	15,849	22,162	26,827	31,156	14,490	6,027
12	8,013	1,543	1,138	1,320	1,296	1,633	414	4,989
13	6,003	1,410	1,136	965	899	883	277	4,509
14	5,147	747	743	781	955	1,199	499	5,253
15	13,340	2,755	2,350	2,248	2,276	2,085	639	4,661

Total wage earners includes persons who were paid in kind rather than in money wages. These figures do not include own-account earners, e.g. farmers, professional people, and owners of business enterprises.

# INDUSTRIAL INFORMATION SOURCES

Various branches of the provincial government, chartered banks, railways and utility companies are equipped to gather, analyze, compile and publish information for the purpose of furthering the industrial development of the province.

## PROVINCIAL GOVERNMENT SERVICES

### INDUSTRIAL DEVELOPMENT BRANCH:

The prime functions of this branch are to attract new industries to Alberta, and to assist and encourage the expansion of established industries. Information is provided on markets, raw materials, plant sites, labour, and other industrial location factors. The branch arranges for displays at trade fairs and exhibitions to encourage the sale and export of Alberta made products.

Special brochures on cities, towns and villages are prepared for publication.

### ALBERTA BUREAU OF STATISTICS:

The Bureau analyzes and publishes statistics pertinent to the economic development of Alberta. Current and long term trends and indicators are documented and analyzed.

Special market surveys are conducted at the request of businessmen. Market surveys are also initiated by the Bureau when it is believed that the existing market is of the size sufficient to justify establishment of a new industrial plant.

### ALBERTA SECURITIES COMMISSION:

The Commission regulates and controls the issuing of shares, stocks, bonds and debentures for sale to the public and investigates all fraudulent acts committed in connection with the sale of securities. All persons engaged in the securities business must be registered and the securities themselves must be qualified by the filing of a prospectus.

### FARM ECONOMICS BRANCH:

This newly formed branch in the Department of Agriculture conducts studies of farm business management, of costs of products, and of marketing farm commodities. Agricultural statistics for the province are prepared by the branch.

### PROVINCIAL MARKETING BOARD:

The Provincial Marketing Board through the Crown Corporation, Marketing Services Limited, offers financial assistance to Alberta industries. Such assistance normally takes the form of purchasing materials used in a manufacturing process. These materials are sold and delivered to the client company as required.

Through this method Alberta industries are able to obtain materials at advantageous times and in quantities sufficient to qualify for more attractive prices while not tying up working capital in inventories.

### "BUY ALBERTA" PROGRAMME:

Various branches of the Department of Industry and Development are responsible for the "Buy Alberta" programme which is designed to promote the growth of Alberta industries by advertising and identifying the products of local manufacturers.



A standing advisory committee composed of members of government and key organizations throughout the province meets periodically to discuss various advertising approaches to stimulate interest.

#### RESEARCH COUNCIL OF ALBERTA:

The Council engages in research studies on Alberta's natural resources to further their development. Geological teams investigate mineral occurrences and deposits to determine quality and volume. The fossil fuels -- coal, petroleum and natural gas receive emphasis in the research programs -- both fundamental and applied. A technical information service is offered to assist in solution of technical and production problems. Process and product research and development are undertaken for industry on a contract basis.

#### ALBERTA FREIGHT BUREAU:

The function of the Bureau is to assist industry, municipalities, farm organizations, Chambers of Commerce, and the people of the Province generally, whether shippers or receivers of freight, in securing and maintaining rates for transportation which are in the best interest of all. The personnel of the Bureau are available to study any transportation problems of proposed or existing industry, recommending and following up possible solutions, or giving advice on transportation problems.

#### FEDERAL GOVERNMENT SERVICES

##### INDUSTRIAL DEVELOPMENT BANK:

The Industrial Development Bank helps finance small and medium size businesses of almost every type, when required financing is not available from other sources on reasonable terms. The I.D.B. lends money to purchase fixed assets, to finance the establishment of new businesses, or a change of ownership, and to strengthen working capital. The security required varies from loan to loan and according to the laws of the various provinces. It is usually by realty mortgage, chattel mortgage or mortgage bond.

##### DEPARTMENT OF TRADE AND COMMERCE - REGIONAL OFFICE:

The Regional Offices of the Department of Trade and Commerce, Winnipeg and Vancouver, provide focal points for prairie commercial and industrial firms to initiate communication with federal departments in Ottawa. Problems connected with imports or exports, tariffs, industrial development may be brought to the attention of the regional office. Through the use of telex facilities there is rapid communication with the Departments head office in Ottawa.

##### NON-GOVERNMENT SERVICES:

Special industrial development departments are maintained by chartered banks, utility companies and railways. Many cities and towns have industrial commissioners to provide up-to-date information on local conditions. Inquiries should be directed to the following addresses:

BANKS

BANK OF MONTREAL:  
Assistant General Manager,  
Main Branch,  
140 - 8th Avenue, West, Calgary, Alberta.

The Manager, Main Branch,  
Jasper Avenue & 101st Street, Edmonton, Alberta.

BANK OF NOVA SCOTIA:  
The Manager, Main Branch,  
125 - 8th Avenue, West, Calgary, Alberta.

The Manager, Main Branch,  
10050 - Jasper Avenue, Edmonton, Alberta.

CANADIAN IMPERIAL BANK OF COMMERCE:  
Business Development Department,  
Regional Office,  
309 - 8th Avenue, South West, Calgary, Alberta.

Manager, Business Development Department,  
402 Jasper Avenue & 100th Street, Edmonton, Alberta.

ROYAL BANK OF CANADA:  
Manager, Commercial Industrial Development,  
409 - 8th Avenue, West, Calgary, Alberta.

Branch Development Officer,  
10023 - Jasper Avenue, Edmonton, Alberta.

TORONTO DOMINION BANK:  
Business Development, Oil & Gas Dep't.  
505 - 8th Avenue, West, Calgary, Alberta.

Special Representative, Business Development,  
Alberta Division Office,  
Jasper Avenue and 100th Street, Edmonton, Alberta.

TREASURY BRANCH - GOVERNMENT OF ALBERTA:  
The Manager, Main Branch,  
717 - 6th Avenue, S.W., Calgary, Alberta.

The Manager, Main Branch,  
9954 - Jasper Avenue, Edmonton, Alberta.

RAILWAYS

THE CANADIAN NATIONAL RAILWAY COMPANY:  
Industrial Agent, C.N.R. Station,  
Edmonton, Alberta.

Industrial Agent, C.N.R. Station,  
Calgary, Alberta.

THE CANADIAN PACIFIC RAILWAY COMPANY:  
Supt., Industrial and Agricultural Development,  
C.P.R. Station, Calgary, Alberta.

UTILITY COMPANIES

CALGARY POWER LIMITED:  
Director of Industrial Development,  
140 - 1st Avenue, West, Calgary, Alberta.

Commercial Manager,  
10121 - 151 Street, Edmonton, Alberta.

CANADIAN WESTERN NATURAL GAS CO. LTD.:  
Customer Sales and Service Department,  
140 - 6th Avenue, S.W., Calgary, Alberta.

NORTHWESTERN UTILITIES LTD.:  
New Business Department,  
10040 - 104 Street, Edmonton, Alberta.

INDUSTRIAL DEVELOPMENT DEPARTMENTS:  
MUNICIPALITIES

CITY OF CALGARY:  
Co-ordinator of Industrial Development,  
City of Calgary, City Hall, Calgary, Alberta.

CITY OF EDMONTON:  
Planning Development Department,  
City Hall, Edmonton, Alberta.

CITY OF LETHBRIDGE:  
Industrial Co-ordinator,  
City Hall, Lethbridge, Alberta.

CITY OF MEDICINE HAT:  
City Engineer and Industrial Co-ordinator,  
City Hall, Medicine Hat, Alberta.

CITY OF RED DEER:  
Director of Industrial Development,  
City Hall, Red Deer, Alberta.

CITY OF CAMROSE:  
Industrial Representative,  
City Hall, Camrose, Alberta.

CITY OF DRUMHELLER:  
Industrial Co-ordinator,  
Box 331, Drumheller, Alberta.

EDMONTON AREA INDUSTRIAL DEVELOPMENT  
ASSOCIATION  
Executive Secretary,  
5th Floor, Professional Building,  
10830 - Jasper Avenue, Edmonton, Alberta.

The purpose of the association is to provide information and practical assistance to those interested in establishing a new business in the Edmonton area.

CITY OF GRANDE PRAIRIE:  
Director of Industrial Development,  
City Hall, Grande Prairie, Alberta.

CITY OF WETASKIWIN:  
Industrial Representative,  
City Hall, Wetaskiwin, Alberta.

CITY OF LLOYDMINSTER:  
Industrial Representative,  
5625 - 50 Street, Lloydminster, Alberta.

MUNICIPAL DISTRICT OF RED DEER NO. 55:  
Industrial Representative,  
Lousana, Alberta.

TOWN OF ATHABASCA:  
Industrial Representative,  
Box 330, Athabasca, Alberta.

TOWN OF BROOKS:  
Industrial Representative,  
Town Hall, Brooks, Alberta.

TOWN OF EDSON:  
Industrial Representative,  
Town Hall, Edson, Alberta.

TOWN OF PONOKA:  
Industrial Representative,  
Box 940, Ponoka, Alberta.

TOWN OF HARDISTY:  
Industrial Representative,  
Town Hall, Hardisty, Alberta.

TOWN OF STETTTLER:  
Industrial Representative,  
Town Hall, Stettler, Alberta.

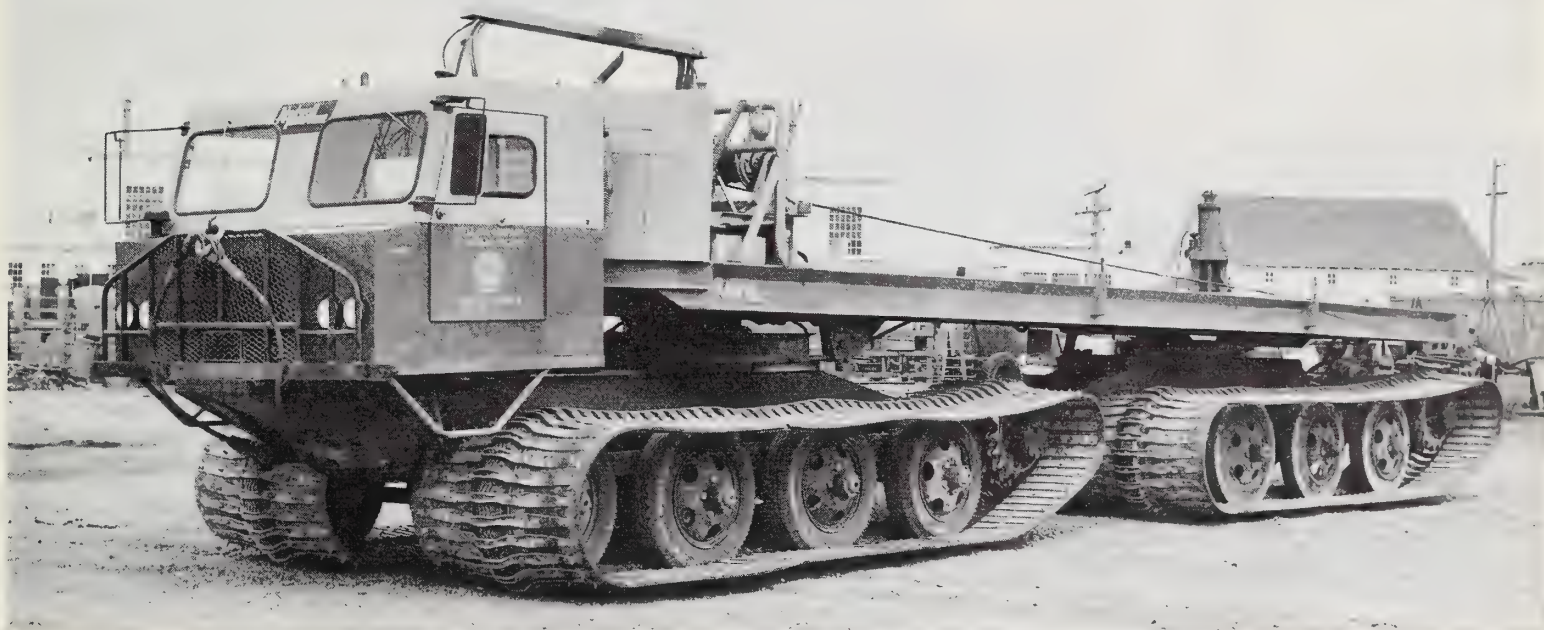
TOWN OF VEGREVILLE:  
Industrial Representative,  
Town Hall, Vegreville, Alberta.

TOWN OF VERMILION:  
Industrial Representative,  
Box 540, Vermilion, Alberta.

TOWN OF WAINWRIGHT:  
Industrial Representative,  
Town Hall, Wainwright, Alberta.



*Alberta's natural resources provide raw materials for the manufacture of a range of products from . . .*



*Especially designed carrier vehicles for the construction industry.*



*Attractive glass ornaments made from Alberta's fine silica sand.*





*Cultivators, designed and fabricated in Alberta by Albertans for Alberta agriculture.*



*And sulphur, a previously wasted component of natural gas.*



## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

Coal, petroleum, natural gas, pro-  
gravel.

Coal, petroleum, natural gas, sand,  
gravel, bentonite.

Coal, petroleum, natural gas, sand,  
gravel, clay, shale, bentonite.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, honey.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, vege-  
tables.

Hides, wool, straw.

Hides, straw.

Hides, wool, straw.

Gross Value Manufacturing - 1961  
\$6, 227, 000  
Foods and Beverages  
Paper Products  
Iron and Steel Products  
Products of Petroleum and Coal  
Chemical Products

Gross Value Manufacturing - 1961  
Confidential  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Non-metallic Mineral Products

Gross Value Manufacturing - 1961  
\$200, 000.  
Foods and Beverages  
Wood Products  
Iron and Steel Products

Population: 6148  
Population within 50 mi. radius  
1961 census: 38, 000

Population: 7356  
Population within 50 mi. radius  
1961 census: 97, 000 (Excl. Edmonton)

Population: 2931  
Population within 50 mi. radius  
1961 census: 39, 000

City owned sites available on trackage.  
Price to be negotiated.

City and privately owned sites avail-  
able. Trackage for some sites.

50 acres @ \$100 - \$500 per acre.  
Utilities, trackage.



*Cultivators, designed and fabricated in Alberta by Albertans for Alberta agriculture.*



*And sulphur, a previously wasted component of natural gas.*



# CALGARY

# EDMONTON

## I LOCATION OF PRODUCTION MATERIALS

### (1) Minerals & their by-products:

(a) Metallic: Iron Ore (near Burmis, 150 mi. s.w.)

Base metals & uranium from N.W.T. shipped through city. Refined nickel at Ft. Saskatchewan from ore concentrates. Metals in nickel refinery slag.

(b) Non-metallic: Coal, petroleum, natural gas, sulphur limestone, barytes, sand, gravel shale, quartzite.

Coal, petroleum, natural gas, sulphur limestone, sand, gravel, clay, shale, marl, bentonite.

### (2) Non-mineral & by-products:

(a) Foods: Meat, dairy products, poultry products, coarse grains, wheat.

Meats, dairy products, poultry products, wheat, coarse grains, fish, vegetables, honey.

(b) Forest products: Finished lumber, poles and ties.

Finished lumber, plywood, wood pulp.

(c) Fibres, furs, hides: Hides, brush bristles, straw.

Hides, furs, synthetic yarns, glass fibre, straw.

### (3) Partly processed or manufactured products:

Gross Value Manufacturing - 1961  
\$282,161,000  
Foods and Beverages  
Leather Products  
Textile Products (except clothing)  
Clothing (textile and fur)  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Transportation Equipment  
Non-ferrous Metal Products  
Electrical Apparatus  
Non-metallic Mineral Products  
Products of Petroleum & Coal  
Chemical Products  
Rubber Products  
Paper Products  
Farm Machinery

Gross Value Manufacturing - 1961  
\$409,520,000  
Foods and Beverages  
Rubber Products  
Leather Products  
Textile Products (except clothing)  
Clothing (textile and fur)  
Paper Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Transportation Equipment  
Non-ferrous Metal Products  
Electrical Apparatus  
Non-metallic Mineral Products  
Products of Petroleum & Coal  
Wood Products

## II POPULATION OF CITIES: 1963

Population: 307,000  
Population within 50 mile radius  
1961 census: 323,000

Population: 358,000  
Population within 50 mile radius  
1961 census: 437,000

## III SITES:

### (1) Area and cost of land available for industrial expansion as of 1963

HIGHFIELD INDUSTRIAL PARK:  
44 acres remaining @ \$6,750-9,500 per acre. Utilities, trackage. Zoned light industrial. Surrounding area subject to zoning and performance standards.

City - Owned  
\$3,000 to \$6,000 per acre, exclusive of utility charges.

FOOTHILLS INDUSTRIAL PARK:  
540 acres @ \$6,500. - 6,750. per acre. Utilities, C.P. and C.N. trackage. Zoned into heavy and light industrial areas.

Trackage

Zoned

MERIDIAN INDUSTRIAL ESTATES:  
25 acres remaining @ \$7,000.-11,000. per acre. Utilities, trackage, Zoned light industrial. Private development.

AIRPORT SUBDIVISION:  
42 acres developed for general commercial and light industrial use - priced \$8,000. - 14,000. per acre as a fully serviced package. Building standards.

# INDUSTRIAL LOCATION FACTORS - EIGHT ALBERTA CITIES

## LETHBRIDGE

Iron Ore (near Burmis, approximately 75 mi. w.)

Coal, petroleum, natural gas, sulphur, limestone, barytes, sand, gravel, bentonite, mica schist, talc, volcanic ash, pyrophyllite, oyster shells.

Meats, dairy products, poultry products, wheat, coarse grains, irrigated vegetable crops, honey, sugar beets, oil bearing seed crops.

Finished lumber, plywood.

Hides, wool, straw.

Gross Value manufacturing - 1961  
\$43, 151, 000  
Foods and Beverages  
Textile Products (except clothing)  
Clothing (textile and fur)  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Transportation Equipment  
Non-metallic Mineral Products  
Chemical Products  
Communication Equipment  
Brooms  
Plastic Products  
Products of Coal

Population: 36, 257  
Population within a 50 mi. radius  
1961 census: 96, 000

474 acres @ \$6, 000-6, 300 per acre.  
Trackage and utilities. Zoned for light and heavy industry.

## MEDICINE HAT

Coal, natural gas, sand, gravel, rough pottery clay, ball mill pebbles.

Meats, wheat, flax, vegetables.

Hides, wool, straw.

Gross Value Manufacturing - 1961  
\$32, 849, 000  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Transportation Equipment  
Non-metallic Mineral Products  
Chemical Products

Population: 25, 109  
Population within a 50 mi. radius  
1961 census: 40, 000

1, 000 acres - price to be negotiated  
Utilities, trackage.

320 acres - privately owned. Utilities trackage available.

## RED DEER

Coal, petroleum, natural gas, sulphur, limestone, sand, gravel, clay.

Meats, dairy products, poultry products.

Finished lumber, pit props, railroad ties.  
Hides, straw.

Gross Value Manufacturing - 1961  
\$10, 292, 000  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Electrical Apparatus  
Non-metallic Mineral Products

Population: 23, 109  
Population within a 50 mi. radius  
1961 census: 108, 000

C.P.R. Industrial Area  
On trackage - \$40.33 per front foot  
Off trackage - \$35.68 per front foot

C.N.R. Industrial Area  
Land - \$2, 700 per acre  
Utilities - \$25.50 per front foot

Golden West Industrial Area  
Land privately owned and prices to be negotiated with owner.



LLOYDMINSTER

CAMROSE

DRUMHELLER

Coal, petroleum, natural gas, pro-  
gravel.

Coal, petroleum, natural gas, sand,  
gravel, bentonite.

Coal, petroleum, natural gas, sand,  
gravel, clay, shale, bentonite.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, honey.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, vege-  
tables.

Hides, wool, straw.

Hides, straw.

Hides, wool, straw.

Gross Value Manufacturing - 1961  
\$6, 227, 000  
Foods and Beverages  
Paper Products  
Iron and Steel Products  
Products of Petroleum and Coal  
Chemical Products

Gross Value Manufacturing - 1961  
Confidential  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Non-metallic Mineral Products

Gross Value Manufacturing - 1961  
\$200, 000.  
Foods and Beverages  
Wood Products  
Iron and Steel Products

24" be-

al, pro-

.dustrial

Population: 6148  
Population within 50 mi. radius  
1961 census: 38, 000

Population: 7356  
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1961 census: 97, 000 (Excl. Edmonton)

Population: 2931  
Population within 50 mi. radius  
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City owned sites available on trackage.  
Price to be negotiated.

City and privately owned sites avail-  
able. Trackage for some sites.

50 acres @ \$100 - \$500 per acre.  
Utilities, trackage.

ialusers



*Cultivators, designed and fabricated in Alberta by Albertans for Alberta agriculture.*



*And sulphur, a previously wasted component of natural gas.*



## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

Coal, petroleum, natural gas, pro-  
gravel.

Coal, petroleum, natural gas, sand,  
gravel, bentonite.

Coal, petroleum, natural gas, sand,  
gravel, clay, shale, bentonite.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, honey.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, vege-  
tables.

Hides, wool, straw.

Hides, straw.

Hides, wool, straw.

Gross Value Manufacturing - 1961  
\$6, 227, 000  
Foods and Beverages  
Paper Products  
Iron and Steel Products  
Products of Petroleum and Coal  
Chemical Products

Gross Value Manufacturing - 1961  
Confidential  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Products  
Iron and Steel Products  
Non-metallic Mineral Products

Gross Value Manufacturing - 1961  
\$200, 000.  
Foods and Beverages  
Wood Products  
Iron and Steel Products

Population: 6148  
Population within 50 mi. radius  
1961 census: 38, 000

Population: 7356  
Population within 50 mi. radius  
1961 census: 97, 000 (Excl. Edmonton)

Population: 2931  
Population within 50 mi. radius  
1961 census: 39, 000

City owned sites available on trackage.  
Price to be negotiated.

City and privately owned sites avail-  
able. Trackage for some sites.

50 acres @ \$100 - \$500 per acre.  
Utilities, trackage.





LLOYDMINSTER

CAMROSE

DRUMHELLER

10" - 12" black soil. 15" - 20" compact sub-soil. Lime layer 24" - 30" below surface.

12" - 14" black soil. 24" - 30" compact clay subsoil. Lime layer 30" - 40" below surface. Drainage good.

Sedimentary soil. Lime layer 24" below surface.

NATURAL GAS:  
Rate #1 - General Rate.  
Commercial and Residential  
  
1st, 2 MCF or less-per month \$3.00  
Minimum charge per month \$3.00  
All over 2 MCF per month .52 per MCF.  
  
Rate #2 - Optional Rate.  
Users in excess of 1, 240 MCF per year (by contract)  
  
Fixed charge - \$20.00 per month minimum plus commodity charge  
.36¢ per MCF minimum charge \$20.00 per month.

PROPANE:  
100 lb. cylinder - gas - \$5.50  
Wholesale prices available.  
DIESEL FUEL:  
Winter and summer grades - 19.7¢ per gallon (Dealer Tank Wagon Price)

Natural gas, electricity, coal, propane, diesel fuel.  
  
NATURAL GAS:  
Optional Rate  
Commercial  
Consumption over 11900 Therms  
Fixed Charges - \$20.00  
Usage rate -2.7¢ per Therm.

Natural gas, electricity, coal, propane, diesel fuel.  
  
NATURAL GAS:  
Rate: 18¢ per Mcf for large industrial users.

COAL:  
.75¢ per ton for large industrial users





# CALGARY

# EDMONTON

## III SITES: (Continued)

FAIRVIEW INDUSTRIAL PARK:  
25 acres remaining @ about \$8,000.  
per acre. Serviced. Zoned light and  
special industrial. Private develop-  
ment.

HAYSBORO INDUSTRIAL PARK:  
50 acres remaining @ \$9,000.-10,000.  
per acre. Trackage, zoned light in-  
dustrial. Private development.

GREENVIEW INDUSTRIAL DISTRICT:  
A few small sites remaining. Zoned  
light industrial. Private development.

C. P. R. ODGEN SHOPS AREA:  
75 acres zoned heavy industrial. Rail-  
way leases serviced sites with track-  
age.

- (2) Soil structure and topographic  
features:

6" - 12" black soil  
2' - 3' heavy sub-soil with admixture  
of sand and gravel. Gravel base.  
Bearing qualities good. Sub-surface  
drainage good. Water table not ad-  
versely high.

6" - 12" black soil. Sub-soil heavy  
gumbo clay to below basement depth  
with tendency to expansion.

## IV INDUSTRIAL FUEL:

- (1) Types of fuel available:

Natural gas, electricity, coal, propane,  
diesel fuel.

Natural gas, electricity, coal, propane,  
fuel oil.

- (2) Cost of fuel to industry:

### NATURAL GAS:

#### (i) OPTIONAL RATES

##### (a) General Service

##### Availability:

This rate is available to all customers  
using in excess of 18,650 Mcf per year.

Net Rate: Fixed Charge - \$150.00  
per month; plus Commodity Charge -  
25¢ per Mcf; Minimum Monthly Charge -  
\$150.00.

##### (b) Special Service

##### Availability:

To customers on annual contract whose  
annual consumption of gas is not less  
than 200,000 Mcf and who are located  
adjacent to the Company's main trans-  
mission lines serving the Calgary-  
Lethbridge System, and served directly  
therefrom.

Net Rate: Fixed Charge - \$650.00  
per month; plus Commodity Charge -  
22¢ per Mcf; Minimum Monthly Charge -  
\$650.00.

#### (ii) HIGH LOAD FACTOR RATES

##### (a) General Service

##### Availability:

To customers on annual contract whose  
annual consumption of gas is not less  
than 10,000 Mcf. and whose total con-  
sumption during the six meter reading  
periods ending in May, June, July,  
August, September and October, is not  
less than 40 per cent of their total con-  
sumption for the year.

### NATURAL GAS:

The rate for natural gas service is de-  
pendent upon the users annual consump-  
tion and pattern use. A typical indus-  
trial rate follows:

Available on annual contract to all  
customers who are located adjacent to  
and served directly from the main  
transmission lines serving the in-  
tegrated system, or from the Edmonton  
high pressure loop and whose annual  
consumption is more than 2,750,000  
Therms and whose total consumption  
during the six meter reading periods  
ending in May, June, July, August,  
September and October is not less than  
40 % of their total consumption during  
the contract year.

Fixed charge 8¢ per month per Therm  
of maximum 24-hour demand. Comm-  
odity for all consumption - 1.5¢ per  
Therm.

(1 Therm = 100,000 British Thermal  
Units)

Still lower rates are available on a 5  
year contract basis for large indus-  
trial users.

Detailed information on natural gas  
service and natural gas rates can be  
obtained by contacting:

The Manager,  
Sales and Industrial Development,  
Northwestern Utilities, Limited,  
10040 - 104 Street,  
EDMONTON - Alberta.

## LETHBRIDGE

## MEDICINE HAT

## RED DEER

Brown and black soil. Gravel sub-soil.  
Load bearing 4,000 lbs. per sq. ft.

10" - 15" brown soil. Sub-soil clay.  
Lime layer 15" - 20" below surface.

12" - 14" black soil. 24" - 30" compact sub-soil. Lime layer 40" below surface.

Natural gas, electricity, coal, propane,  
diesel fuel.

Natural gas, electricity, coal, propane,  
diesel fuel.

Natural gas, electricity, coal, propane,  
diesel fuel.

## NATURAL GAS:

## (i) OPTIONAL RATES

## (a) General Service

## Availability:

This rate is available to all customers  
using in excess of 18,650 Mcf per year.

Net Rate: Fixed charge - \$150.00  
per month; plus Commodity Charge -  
25¢ per Mcf; Minimum Monthly Charge  
- \$150.00.

## (b) Special Service

## Availability:

To customers on annual contract whose  
annual consumption of gas is not less  
than 200,000 Mcf and who are located  
adjacent to the Company's main trans-  
mission lines serving the Calgary-  
Lethbridge System, and served direct-  
ly therefrom.

Net Rate: Fixed charge - \$650.00  
per month; plus Commodity charge -  
22¢ per Mcf; Minimum Monthly Charge  
- \$650.00.

## (ii) High Load Factor Rates:

## (a) General Service

## Availability:

To customers on annual contract whose  
annual consumption of gas is not less  
than 10,000 Mcf, and whose total con-  
sumption during the six meter reading  
periods ending in May, June, July,  
August, September and October, is not  
less than 40 per cent of their total con-  
sumption for the year.

## NATURAL GAS:

## Gas Rates - Class "C"

## Applicable to:

Large Industrial power and process,  
and wholesale contract customers.  
Limited to minimum of 6,000 Mcf per  
annum and 50% use of demand.

Demand Charges - \$1.00 per 100 Mcf  
per month based on average monthly  
volume used in the then expired annual  
period, from the 1st January to 31st  
December.

- Plus -

## Fuel Rates:

Up to 750 Mcf per month 17¢/Mcf  
Up to 2,000 Mcf per month 16.5¢/Mcf  
Up to 5,000 Mcf per month 14.5¢/Mcf  
Up to 15,000 Mcf per month 13.5¢/Mcf  
All over 15,000 Mcf per month 13¢  
/Mcf

Minimum Charge - The demand charge

Account - Net. No meter rental.

## NATURAL GAS:

General Rate: Available to all cust-  
omers. First 20 Therms or less \$3.00  
per month. All additional Therms 45¢  
per Therm.

Optional Rate: Available on annual con-  
tract to customers whose annual con-  
sumption is more than 11,900 Therms.

Fixed Charge - \$20.00 per month  
Plus Commodity Charge - .27¢ per  
therm.

Minimum Monthly Charge - \$20.00

## Optional High Load Factor Rate:

Available on annual contract to all cust-  
omers whose annual consumption is  
more than 100,000 therms.

Fixed Charges - \$20.00 per month  
plus 22¢ per month per  
Therm of maximum 12 hour  
demand.

Minimum Monthly Charge -  
Fixed Charge.

## PROPANE:

Bulk per gallon - .15¢

100 lb. cylinders - \$5.00

## DIESEL FUEL:

Per gallon - .19¢

COAL: Shed Car

Nut & Stoker \$7.50/ton \$7.00/ton

Egg \$7.80/ton \$7.30/ton

Lump \$9.25/ton \$8.75/ton



## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

Commercial Airport  
 No scheduled air service  
 Railways: CNR, CPR  
 Bus and Truck service,  
 Highways - paved connections

Municipal Airport  
 No scheduled air service  
 Railways: CNR, CPR  
 Bus and Truck service  
 Highways - paved connections

Private Airport only  
 No scheduled air service  
 Railways: CNR, CPR  
 Bus and Truck service  
 Highways - paved connections

Trading area includes North 40 miles  
                                 West 30 miles  
                                 South 70 miles  
                                 East 60 miles  
 Population served approximately -  
 55,000 (Trading area)

Trading area includes north to Tofield,  
 east to Saskatchewan border; west to  
 Gwynne; south to Stettler.  
 Population served approximately (50  
 mile radius excluding Edmonton 97,000)

Trading area includes north to Stettler;  
 east to Saskatchewan; west to Beiseker.  
 Population served approximately (50  
 mile radius) 39,000.

Truck terminal facilities, CNR and CPR  
 branch lines; paved highways to Edmon-  
 ton and Saskatoon. Dust free highways  
 north and south.

Truck terminal facilities; CNR and  
 CPR branch lines; paved highway to  
 Edmonton and Calgary.

Truck terminal facilities; CNR and  
 CPR branch lines; paved highway to  
 Calgary.

Canadian Utilities Ltd. steam gener-

Calgary Power Ltd.

Canadian Utilities Ltd. steam gener-





## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

Commercial Airport  
No scheduled air service  
Railways: CNR, CPR  
Bus and Truck service,  
Highways - paved connections

Municipal Airport  
No scheduled air service  
Railways: CNR, CPR  
Bus and Truck service  
Highways - paved connections

Private Airport only  
No scheduled air service  
Railways: CNR, CPR  
Bus and Truck service  
Highways - paved connections

Trading area includes North 40 miles  
West 30 miles  
South 70 miles  
East 60 miles  
Population served approximately -  
55,000 (Trading area)

Trading area includes north to Tofield,  
east to Saskatchewan border; west to  
Gwynne; south to Stettler.  
Population served approximately (50  
mile radius excluding Edmonton 97,000)

Trading area includes north to Stettler;  
east to Saskatchewan; west to Beiseker.  
Population served approximately (50  
mile radius) 39,000.

Truck terminal facilities, CNR and CPR  
branch lines; paved highways to Edmon-  
ton and Saskatoon. Dust free highways  
north and south.

Truck terminal facilities; CNR and  
CPR branch lines; paved highway to  
Edmonton and Calgary.

Truck terminal facilities; CNR and  
CPR branch lines; paved highway to  
Calgary.

Canadian Utilities Ltd. steam gener-

Calgary Power Ltd.

Canadian Utilities Ltd. steam gener-





# CALGARY

# EDMONTON

## IV INDUSTRIAL FUEL: (Continued)

Net Rate: Fixed Charge - \$20.00 per mo. plus \$1.75 per mo. per Mcf of maximum 12-hour demand; plus Commodity Charge - First 4,000 Mcf per month 17¢ per Mcf. All additional Mcf per month 16¢ per Mcf. Minimum Monthly Charge - Fixed Charge.

### (iii) HIGH LOAD FACTOR RATES

#### (b) Special Service

##### Availability:

To customers on annual contract whose annual consumption of gas is not less than 150,000 Mcf and whose total consumption during the six meter reading periods ending in May, June, July, August, September and October is not less than 40 per cent of their total consumption for the year, and who are located adjacent to the Company's main transmission lines serving the Calgary-Lethbridge System, and served directly therefrom.

Net Rate: Fixed Charge - \$20.00 per month plus \$1.00 per month per Mcf of maximum 12-hour demand; plus Commodity Charge - First 75,000 Mcf per month - 17¢ per Mcf. All additional Mcf per month - 15¢ per Mcf. Minimum Monthly Charge - Fixed Charge.

For further information, direct all inquiries to the Manager, Sales and Industrial Development Department, Canadian Western Natural Gas Company Limited, 140 - 6th Avenue, SW., Calgary, Alberta.

## V TRANSPORTATION FACILITIES:

### (1) Facilities available:

International Jet Airport Scheduled service: TCA, CPA, WA, PWA, Transair, Charter Air and Helicopter Rentals.  
Railways: CNR, CPR  
Bus and Truck Service  
Highways - paved connections on Trans Canada Highway.

Edmonton International Airport -

Edmonton Industrial Airport, Namao Airport  
Scheduled service: TCA, CPA, PWA, WARDAIR.  
Railways: CNR, CPR, NAR with extension to Pine Point.  
Bus and Truck Service  
Highways - paved connections.

## VI MARKET AREAS:

Trading area covers all Alberta from Red Deer south; part of southern Saskatchewan; and south central British Columbia.  
Population served approximately (100 mile radius) - 457,000.

Trading area includes Alberta south to Red Deer; east to Lloydminster; west to Jasper, and north to include N.W.T. and northwest B.C. and Yukon.  
Population served approximately (100 mile radius) - 618,000.

## VII DISTRIBUTION FACILITIES:

Adequate storage and warehouse space; truck terminal facilities; railway terminal facilities; CPR transcontinental rail line; Trans Canada Highway.

Adequate storage and warehouse space; truck terminal facilities; CNR transcontinental rail line; NAR connection to Mackenzie River water transport system and extension to Pine Point.

## VIII ELECTRIC POWER:

### (1) Source of Power

Calgary Power Ltd. from 11 existing

City owned gas fired steam generation

INDUSTRIAL LOCATION FACTORS - EIGHT ALBERTA CITIES (Continued)

LETHBRIDGE

MEDICINE HAT

RED DEER

Net Rate: Fixed charge - \$20.00 per month plus \$1.75 per month per Mcf of maximum 12-hour demand; plus Commodity charge - First 4,000 Mcf per month 17¢ per Mcf. All additional Mcf per month 16¢ per Mcf. Minimum Monthly Charge - Fixed Charge.

(iii) High Load Factor Rates:

(b) Special Service

Availability:

To customers on annual contract whose annual consumption of gas is not less than 150,000 Mcf and whose total consumption during the six month reading period May-October is not less than 40 per cent of their total consumption for the year.

Net Rate: Fixed Charge \$20.00 per mo. plus \$1.00 per mo. per Mcf of max. 12-hour demand; plus Commodity charge - First 75,000 Mcf per month - 17¢ per Mcf. All additional Mcf per month - 15¢ per Mcf. Minimum Monthly Charge - Fixed Charge.

For further information direct all inquiries to: Canadian Western Natural Gas Company Limited, 140 - 6 Avenue S.W., Calgary, Alberta.

COAL:

\$4.00 - 4.25 per ton  
F.O.B. Mine prices -  
Lump - \$10 per ton  
Egg - - \$ 8.50 per ton  
Stoker - \$6.50 per ton  
Bone - \$4.00 per ton  
Pea Slack - \$2.25 per ton

Commercial Airport

Scheduled service: TCA

Railways: CPR

Bus and Truck service

Highways - paved connections

Commercial Airport

Scheduled service: TCA

Railways: CPR

Bus and Truck service

Highways - paved connections on Trans Canada Highway

Private Airport only

No scheduled air service

Railways: CNR, CPR

Bus and Truck service

Highways - paved connections

Trading area includes Alberta south to international border; east to Saskatchewan border; north to Nanton and Vulcan; and west through Crowsnest Pass to Trail - B.C.

Population served approximately (50 mile radius) - 96,000

Adequate warehouse space; truck terminal facilities; CPR Crowsnest trans-continental rail line.

Trading area includes south to international border, east to Maple Creek, Saskatchewan, north-west to Duchess.

Population served approximately (50 mile radius) 40,000

Truck terminal facilities; CPR trans-continental rail line; Trans Canada Highway.

Trading area includes central Alberta east to Saskatchewan border.

Population served approximately (50 mile radius) 108,000

Adequate warehouse space; truck terminal facilities; CPR line Edmonton to Calgary.

City owned gas fired steam generation

City owned gas fired steam generation

Calgary Power Ltd.,



## LLOYDMINSTER

ation plant at Vermilion.

## Commercial Rate:

1st 1,000 watts installed; 50¢ per month, each additional 1,000 watts installed; 50¢ per month.

## Energy Charge:

First 50 KWH per month per KW installed; 8¢ per month.  
Next 150 KWH per month per KW installed; 5¢ per month.  
All over 200 KWH per mo. per KW installed; 2 1/2¢ per month.

## Power Rate:

Up to 25 KWH per hp: 7¢ per KWH  
Next 25 KWH per hp: 4¢ per KWH  
Excess of 50 KWH per hp: 2¢ per KWH

Special industrial rates to be arranged for large users in accordance with requirements of consumer.

Water supply from wells drilled into a glacial aquifer located 12 miles north of the City. The water is pumped through a 10 - inch main to the water treatment plant. The plant has a capacity of 700 gallons of treated water per minute.

## CAMROSE

## Commercial and General Service:

## Demand Charge:

\$1.00 per month per KVA (or fraction thereof) of demand.

## Energy Charge:

The first 60 KWH per month per KVA of demand - 5.0¢ per KWH.  
All additional energy used in any month - 1.5¢ per KWH.

"Demand" means the maximum 30 minute rate of power delivery, expressed in Kilovolt-amperes (KVA), during the previous 12 months; and in no case less than 1 KVA.

## Power Service:

Available only for three-phase motors or x-ray apparatus, welding transformers, etc., of aggregate rated capacity 3 horsepower or KVA and over.

## Demand Charge:

\$1.00 per month per KVA of Installation (one motor horsepower being taken as one KVA).

## Energy Charge:

For the first 100 KWH per month per KVA of Installation - 3 1/3¢ per KWH.  
For all over 100 KWH per month per KVA of Installation - 1 1/2¢ per KWH.

Water supply from Battle River.

## DRUMHELLER

ation plant.

## Commercial Rate:

## Demand Charge:

50¢ per 1000 watts connected.  
1st 25 KWH @ 5¢ per KWH.  
Next 100 KWH @ 2 1/2¢ per KWH.  
All additional @ 1 1/2¢ per KWH.

## Power Rate:

1st 25 KWH per hp @ 5¢ per KWH.  
Next 50 KWH per hp @ 3¢ per KWH.  
All additional KWH per hp @ 2¢ per KWH.

Special rates arranged for large users in accordance with consumer requirements.

Water supply from wells approximately 40 feet deep, fed by infiltration from Red Deer River. Main pump capacity 1800 gallons per minute. Standby pump capacity 1000 gals. per minute. Water storage capacity 175,000 gal. in town, 60,000 gal. at plant.





LLOYDMINSTER

CAMROSE

DRUMHELLER

Commercial Airport  
No scheduled air service  
Railways: CNR, CPR  
Bus and Truck service,  
Highways - paved connections

Municipal Airport  
No scheduled air service  
Railways: CNR, CPR  
Bus and Truck service  
Highways - paved connections

Private Airport only  
No scheduled air service  
Railways: CNR, CPR  
Bus and Truck service  
Highways - paved connections

Trading area includes North 40 miles  
West 30 miles  
South 70 miles  
East 60 miles  
Population served approximately -  
55,000 (Trading area)

Trading area includes north to Tofield,  
east to Saskatchewan border; west to  
Gwynne; south to Stettler.  
Population served approximately (50  
mile radius excluding Edmonton 97,000)

Trading area includes north to Stettler;  
east to Saskatchewan; west to Beiseker.  
Population served approximately (50  
mile radius) 39,000.

Truck terminal facilities, CNR and CPR  
branch lines; paved highways to Edmon-  
ton and Saskatoon. Dust free highways  
north and south.

Truck terminal facilities; CNR and  
CPR branch lines; paved highway to  
Edmonton and Calgary.

Truck terminal facilities; CNR and  
CPR branch lines; paved highway to  
Calgary.

Canadian Utilities Ltd. steam gener-

Calgary Power Ltd.

Canadian Utilities Ltd. steam gener-





## LLOYDMINSTER

ation plant at Vermilion.

## Commercial Rate:

1st 1,000 watts installed; 50¢ per month, each additional 1,000 watts installed; 50¢ per month.

## Energy Charge:

First 50 KWH per month per KW installed; 8¢ per month.  
Next 150 KWH per month per KW installed; 5¢ per month.  
All over 200 KWH per mo. per KW installed; 2 1/2¢ per month.

## Power Rate:

Up to 25 KWH per hp: 7¢ per KWH  
Next 25 KWH per hp: 4¢ per KWH  
Excess of 50 KWH per hp: 2¢ per KWH

Special industrial rates to be arranged for large users in accordance with requirements of consumer.

Water supply from wells drilled into a glacial aquifer located 12 miles north of the City. The water is pumped through a 10 - inch main to the water treatment plant. The plant has a capacity of 700 gallons of treated water per minute.

## CAMROSE

## Commercial and General Service:

## Demand Charge:

\$1.00 per month per KVA (or fraction thereof) of demand.

## Energy Charge:

The first 60 KWH per month per KVA of demand - 5.0¢ per KWH.  
All additional energy used in any month - 1.5¢ per KWH.

"Demand" means the maximum 30 minute rate of power delivery, expressed in Kilovolt-amperes (KVA), during the previous 12 months; and in no case less than 1 KVA.

## Power Service:

Available only for three-phase motors or x-ray apparatus, welding transformers, etc., of aggregate rated capacity 3 horsepower or KVA and over.

## Demand Charge:

\$1.00 per month per KVA of Installation (one motor horsepower being taken as one KVA).

## Energy Charge:

For the first 100 KWH per month per KVA of Installation - 3 1/3¢ per KWH.  
For all over 100 KWH per month per KVA of Installation - 1 1/2¢ per KWH.

Water supply from Battle River.

## DRUMHELLER

ation plant.

## Commercial Rate:

## Demand Charge:

50¢ per 1000 watts connected.  
1st 25 KWH @ 5¢ per KWH.  
Next 100 KWH @ 2 1/2¢ per KWH.  
All additional @ 1 1/2¢ per KWH.

## Power Rate:

1st 25 KWH per hp @ 5¢ per KWH.  
Next 50 KWH per hp @ 3¢ per KWH.  
All additional KWH per hp @ 2¢ per KWH.

Special rates arranged for large users in accordance with consumer requirements.

Water supply from wells approximately 40 feet deep, fed by infiltration from Red Deer River. Main pump capacity 1800 gallons per minute. Standby pump capacity 1000 gals. per minute. Water storage capacity 175,000 gal. in town, 60,000 gal. at plant.





CALGARY

EDMONTON

VIII ELECTRIC POWER: (Continued)

(\*) All electric power supplied is 3 phase, 60 cycle A/C. All power plants interconnected to accommodate increased load demands and improve reliability of supply.

and 1 developing hydro electric plants and one steam plant. Supplied at any voltages required by consumer. City owned distribution system.

plant. Commercial voltages 120 - 240. Industrial power supplied at 2300 or 13,200 volts. Customer to supply all necessary transformers and switching equipment.

(2) Cost:

Commercial Rate:  
1st 300 KWH - 5¢/KWH  
Next 300 KWH - 4¢/KWH  
Additional KWH - 2¢/KWH  
  
Power Rate (Less than 100 KVA):  
1st 30 hrs. per HP connected load -  
--- 2¢/KWH  
Next 30 hrs. per HP connected load -  
--- 1.6¢/KWH  
All additional KWH - 1.2¢/KWH  
  
Wholesale (Industrial) Power - Low  
Voltage network demand over 100 KVA:  
1st 300 KWH - 5¢/KWH  
Next 300 KWH - 4¢/KWH  
Next 30 hrs. use per KVA demand -  
2¢/KWH  
Next 30 hrs. use per KVA demand -  
1.6¢/KWH  
All additional KWH - 1.1¢/KWH  
  
Wholesale (Industrial) Power - Primary  
Voltage demand of 100 KVA of which  
power demand over 50 KVA:  
1st 300 KWH - 5¢/KWH  
Next 300 KWH - 4¢/KWH  
All additional KWH rates depend on  
ownership of transformers.

Commercial Electric Power Rate:  
115/230 volts, single or three phase  
120/208 volts, three phase four wire  
Customers using 10,000 K.W. Hrs. or  
greater will be charged a Minimum of  
75 KW or KVA or by measured max-  
imum demand whichever is the greater.  
Customers who have a demand of 75  
KW or KVA or over will be charged a  
minimum of 10,000 KW Hrs. or by  
measured consumption whichever is  
the greater.  
  
Customers with a measured maximum  
demand of 75 KW or KVA or over to  
pay a minimum bill of \$152.75 per  
month or \$1.00 per KW or KVA which-  
ever is the greater.  
Up to 24 KW Hours \$2.50  
Next 476 KW Hours @ 3.5¢ per KW  
Hour  
Next 1,440 KW Hours @ 2.0¢ per KW  
Hour  
Next 8,059 KW Hours @ 1.3¢ per KW  
Hour.  
Minimum Charge \$2.50 per month  
Consumptions over 10,000 KW Hours  
per month are to be measured on a de-  
mand basis and billed as follows:  
First 40 Hrs. of use of KVA of De-  
mand @ 2.4¢ per KW Hr.  
Next 50 Hrs. of use of KVA of Demand  
@ 1.2¢ per KW Hr.  
Next 50 Hrs. of use of KVA of Demand  
@ 1.1¢ per KW Hr.  
Next 175 Hrs. of use of KVA of Demand  
@ 1.0¢ per KW Hr.  
Over 315 Hrs. of use of KVA of Demand  
@ 0.9¢ per KW Hr.

Service voltage available at any part-  
icular location in the city will be de-  
termined by the Superintendent, Elect-  
rical Distribution System.

IX WATER SUPPLY:

(1) Source & Quantity available:

City supply from Elbow River. Add-  
itional industrial supply from Bow Riv-  
er and wells for individual supply.  
  
Bow River stream flow:  
Average winter minimum: 750 CFS  
Average summer maximum: 13,850 CFS  
  
There is a large undiminishing water  
bearing stratum approximately 50 feet  
below the surface.

Water Supply from North Saskatchewan  
River.  
  
Stream Flow:  
Average winter Minimum 800 CFS.  
Average summer Maximum 22,000  
CFS

## LETHBRIDGE

## MEDICINE HAT

## RED DEER

plant. Supplied at any voltage.

## Availability:

All industrial power users who may be served by existing power lines and who require not less than an average of 10,000 KWH per month on one meter over a 12 month period. Incidental lighting up to 25 percent of the connected power load is allowed.

## Demand Charge: (Monthly)

\$0.80 per KVA for 13,200 V service  
\$1.00 per KVA for 2,300 or 4,000 V service  
\$1.20 per KVA for low voltage service

The demand is the highest monthly demand recorded on an approved demand meter during the present month or the preceding 11 months.

## Energy Charge:

First 10,000 KWH @ 1.4¢ per KWH  
Next 10,000 KWH @ 1.0¢ per KWH  
Remainder up to 300 KWH per KVA demand @ 0.75¢ per KWH.

When the kilowatt hours used per month exceed 300 KWH per KVA of monthly demand, the first 300 KWH per KVA of monthly demand will be billed at the above monthly rates, and all excess will be billed at 0.6¢ per KWH.

Water supply from Oldman River.

## Stream Flow:

Average winter minimum 520 CFS  
Average summer maximum 12,200 CFS

plant. Interconnection with Calgary Power Ltd.  
Availability: (4000 volt service - Class "P-1")  
Primary power customers who are within reach of the City's existing primary distribution lines, and who use the City's standard service at 4000 volts for industrial power service and who have a demand of not less than 100 KVA & use not less than 10,000 KWH per month.

## Demand Charge:

Per KVA of measured demand during the current month or any of the preceding eleven months \$1.00 per KVA.  
plus an

## Energy Charge:

First 100 KWH user per KVA of monthly demand 3/4¢ per KWH  
Remainder 1/2¢ per KWH

## 13,800 Volt Service - Class "P-2"

Wholesale power customers who are within reach of the City's existing 13,800 volt lines, and who use the City's standard service at 13,800 volts for industrial power service and who have a demand of not less than 500 KVA and use not less than 10,000 KWH per month. All utilization equipment provided by the customers in class "P1 & P2".

## Demand Charge:

Per KVA of measured demand during the current month or any of the preceding eleven months \$1.00 per KVA.  
plus an

## Energy Charge:

First 200 KWH used per KVA of Monthly demand 1/2¢ per KWH  
Remainder .33¢ per KWH  
Services at the standard lower secondary voltages also available.

Water supply from South Saskatchewan River. Cooling water from aquifer.

## Stream Flow:

Average winter minimum 1350 CFS  
Average summer maximum 53,870 CFS  
Average water temp. 40°, 50° (in aquifer). Information on request.

## Industrial Rate:

Basic Rate: Service Charge: 75¢ per KVA installed capacity or \$1.00 per KVA demand.  
First 25 KWH per KVA installation: 5¢ per KWH  
Next 50 KWH per KVA installation: 3¢ per KWH  
Next 50 KWH per KVA installation: 2¢ per KWH  
All additional: 1.5¢ per KWH

## Energy Charge:

First 25 KWH per KVA demand: 6¢ per KWH  
Next 25 KWH per KVA demand: 5¢ per KWH  
Next 50 KWH per KVA demand: 3¢ per KWH

Water supply from Red Deer River.

## Stream Flow:

Average winter minimum 250 CFS  
Average summer maximum 19,150 CFS



LLOYDMINSTER

Wellwater - (partly softened, the iron content removed, and it is chlorinated before being delivered into the city system).

Water analysis	Parts per Million
Total Solids	1600
Nitrates	Nil
Hardness	510
Alkalinity	592
Iron	2.7
PH	8.4

Treated Water Analysis	Parts per Mil.
Total Solids	1050
Nitrates	Nil
Fluoride	0.4
Total Alkalinity	348
Nature of Alkalinity	Soda, Lime and Magnesium
Iron	0.02
Total Hardness	262
Ca Hardness	42
Mg Hardness	220
PH Number (Not parts per Million)	9.2

Water Rates:  
1st 3,000 gallons or less used per month - \$4.20  
From 3,001 to 5,000 gals. used per month - \$1.40 per M gallons.  
From 5,001 to 30,000 gals. used per month - \$1.20 per M gallons.  
From 30,001 to 70,000 gals. used per month - \$.80 per M gallons.  
Over 1,000,000 gals. used per month - \$.60 per M gallons.  
Plus sewerage charge of \$2.10 per month to \$60.00 per month.  
Alberta Labour Act  
Provincial Business Licencing  
City permit required for all construction.

Land assessed at 100% of fair value.  
Improvements assessed at 60% of 1947 value.  
1963 mill rate - 60.0

CAMROSE

Two concrete holding reservoirs. Supply considered adequate for all anticipated growth of the city.

Camrose Water Rate Schedule Calgary Power Ltd.

As arranged by agreement with the City of Camrose, new water rates effective from the commencement of the Battle River Water Supply (Dec. 1, 1958) are as follows:

A Minimum Monthly Charge of \$3.00 gross, subject to a prompt payment discount of 25¢, making \$2.75 net, the said minimum charge to include payment for monthly consumption up to 200 cubic feet:  
Next 4,800 cubic feet per month @ 55¢ per 100 cu. ft.  
All over 5,000 cubic feet per month @ 50¢ per 100 cu. ft.

Alberta Labour Act  
Provincial Business Licencing  
City permit required for all construction.

Land assessed at 100% of 1957 value.  
Improvements assessed at 60% of 75% of 1957 replacement value.  
1963 mill rate - 60  
Business tax 4-25% on rental basis.

DRUMHELLER

Well Water and River:

Total hardness: 120 ppm water treatment plant.

Rates: (Minimum Charge: \$2.50 per mo.)

0 - 5,000 gal/mo. : 75¢/1000 gal.  
5,000 - 10,000 gal/mo. : 69¢/1000 gal.  
10,000 - 20,000 gal/mo. : 63¢/1000 gal.  
20,000 - 50,000 gal/mo. : 56¢/1000 gal.  
50,000 - 150,000 gal/mo. : 44¢/1000 gal.  
All over 200,000 gal/mo. : 38¢ per 1000 gal.  
Large industrial users consuming over 1 million gal/mo., flat rate of 17.5¢ per 1000 gal.

Alberta Labour Act  
Provincial Business Licencing  
City permit required for all construction.

Taxable assessment of buildings in 1963 represent approximately 40% of replacement cost in that year.  
Assessment ratio of land to market value approximately 66% in 1963.  
1963 mill rate was 52





LLOYDMINSTER

Well water - (partly softened, the iron content removed, and it is chlorinated before being delivered into the city system).

Water analysis	Parts per Million
Total Solids	1600
Nitrates	Nil
Hardness	510
Alkalinity	592
Iron	2.7
PH	8.4

Treated Water Analysis	Parts per Mil.
Total Solids	1050
Nitrates	Nil
Fluoride	0.4
Total Alkalinity	348
Nature of Alkalinity	Soda, Lime and Magnesium
Iron	0.02
Total Hardness	262
Ca Hardness	42
Mg Hardness	220
PH Number (Not parts per Million)	9.2

Water Rates:  
1st 3,000 gallons or less used per month - \$4.20  
From 3,001 to 5,000 gals. used per month - \$1.40 per M gallons.  
From 5,001 to 30,000 gals. used per month - \$1.20 per M gallons.  
From 30,001 to 70,000 gals. used per month - \$.80 per M gallons.  
Over 1,000,000 gals. used per month - \$.60 per M gallons.  
Plus sewerage charge of \$2.10 per month to \$60.00 per month.  
Alberta Labour Act  
Provincial Business Licencing  
City permit required for all construction.

Land assessed at 100% of fair value.  
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Camrose Water Rate Schedule Calgary Power Ltd.  
As arranged by agreement with the City of Camrose, new water rates effective from the commencement of the Battle River Water Supply (Dec. 1, 1958) are as follows:  
  
A Minimum Monthly Charge of \$3.00 gross, subject to a prompt payment discount of 25¢, making \$2.75 net, the said minimum charge to include payment for monthly consumption up to 200 cubic feet:  
Next 4,800 cubic feet per month @ 55¢ per 100 cu. ft.  
All over 5,000 cubic feet per month @ 50¢ per 100 cu. ft.

Alberta Labour Act  
Provincial Business Licencing  
City permit required for all construction.

Land assessed at 100% of 1957 value.  
Improvements assessed at 60% of 75% of 1957 replacement value.  
1963 mill rate - 60  
Business tax 4-25% on rental basis.

DRUMHELLER

Well Water and River:  
  
Total hardness: 120 ppm water treatment plant.

Rates: (Minimum Charge: \$2.50 per mo.)  
  
0 - 5,000 gal/mo. : 75¢/1000 gal.  
5,000 - 10,000 gal/mo. : 69¢/1000 gal.  
10,000 - 20,000 gal/mo. : 63¢/1000 gal.  
20,000 - 50,000 gal/mo. : 56¢/1000 gal.  
50,000 - 150,000 gal/mo. : 44¢/1000 gal.  
All over 200,000 gal/mo. : 38¢ per 1000 gal.  
Large industrial users consuming over 1 million gal/mo., flat rate of 17.5¢ per 1000 gal.

Alberta Labour Act  
Provincial Business Licencing  
City permit required for all construction.

Taxable assessment of buildings in 1963 represent approximately 40% of replacement cost in that year.  
Assessment ratio of land to market value approximately 66% in 1963.  
1963 mill rate was 52





CALGARY

EDMONTON

IX WATER SUPPLY: (Continued)

(2) Quality of Water Supply:

Bow River water:

Total hardness averages 194 ppm.  
Water clear in winter, somewhat turbid in summer.

Well water total hardness: 180 ppm.

North Saskatchewan River water:

Total hardness untreated: summer, 138 ppm; winter, 228 ppm. Treatment reduces total hardness to approximately 75 ppm year round. Water clear in winter, turbid in summer.

(3) Cost of Water (City Service):

Gallons: Rate per 1,000 gals.

First	5,000	62¢
Next	5,000	55¢
Next	20,000	50¢
Next	30,000	41¢
Next	90,000	28¢
Next	350,000	25¢
Over	500,000	21¢

Minimum monthly charge based on size of service line. Special garden rates - summer months. Sewer service charge additional.

Metered Services Cost per 100 Cu. Ft.

Consumption per Month		Inclusive of Sewer Service
First	800 cu.ft.	43.0¢
Next	3,200 cu.ft.	34.3¢
Next	3,500 cu.ft.	28.2¢
Next	17,500 cu.ft.	26.8¢
Next	475,000 cu.ft.	22.4¢
Next	1 mil. cu.ft.	21.0¢
Over	1.5 mil. cu.ft.	17.5¢

X LOCAL LAWS AND REGULATIONS OF SIGNIFICANCE TO PROSPECTIVE INDUSTRY:

Alberta Labour Act  
Provincial Business Licencing  
City Business Licencing  
City Permit required for all construction (also Planning Department Certificate of Compliance)  
Zoning Bylaw  
Building Code Bylaws  
Waste Disposal Regulations  
District Planning Commission

Alberta Labour Act  
Provincial Business Licencing  
City Business Licencing  
City permit required for all construction  
Zoning Bylaw  
Building Code Bylaws  
Waste Disposal Regulations  
District Planning Commission

XI CITY TAX STRUCTURE:

Land assessed at 100% of 1950/52 fair value.  
Improvements assessed at 60% of 1945 replacement value.  
1963 mill rate was 63 mills  
Business tax 10% on gross rental value.

Land assessed at 100% of fair actual value.  
Buildings and improvements assessed at 60% of fair actual, except single family dwellings which are assessed at 50%.  
This means land and buildings are assessed at approximately 70% of 1957 costs.  
1963 mill rate was 47.5  
Business tax is based on rental value of the premises occupied, and the rates vary from 6% to 20% depending on the classification. There is no tax on machinery.

LETHBRIDGE

MEDICINE HAT

RED DEER

Oldman River water:  
Total  
Total hardness untreated: summer, 120 ppm; winter, 150 ppm. Treatment reduces total hardness by approximately 50% before it enters city mains.

Commercial Water Rates: Rate per Consumption (Cu.ft.) 100 cu.ft. per mo. (from) (non-cum.)		
0 -	800	37¢
801 -	1,800	34¢
1,801 -	4,000	31¢
4,001 -	7,000	28¢
7,001 -	13,600	25¢
13,601 -	21,000	23¢
21,001 -	28,000	22¢
28,001 -	36,000	20¢
36,001 -	100,000	18¢
100,001 -	500,000	16¢
500,001 -	1,500,000	14¢
1,500,001 -	up	13¢

Commercial Minimum Rates:  
(Based on size of meter)

1/2" & 3/4"	\$ 2.50	680 cu.ft.
1"	\$ 3.00	880 cu.ft.
1 1/4"	\$ 3.75	1100 cu.ft.
1 1/2"	\$ 4.50	1320 cu.ft.
2"	\$ 5.25	1540 cu.ft.
3"	\$ 6.50	2100 cu.ft.
4"	\$ 7.50	2420 cu.ft.
6"	\$ 12.00	3870 cu.ft.
8"	\$ 18.00	6430 cu.ft.
10"	\$ 26.00	

Alberta Labour Act  
Provincial Business Licencing  
City Business Licencing  
City permit required for all construction.

Land assessed at 75% of 1957 fair value.  
Improvements assessed at 60% of 75% of 1957 replacement value.

1963 mill rate was 45.0  
Business tax 7 1/2% of assessed fair annual rental value.

South Saskatchewan River water:  
Total hardness: summer, 120 ppm; winter, 240 ppm.

Water Meter Schedule Applicable to All Services:		
Cons. /mo. 1000 gals.	Rate per 1000 gals.	Min. Mo. Chg.
	¢	\$
0 to 6	.30	1.80
6 to 10	.29	2.03
10 to 25	.28	3.08
25 to 45	.27	7.29
45 to 80	.25	12.50
80 to 130	.23	20.70
130 to 175	.21	31.50
175 to 250	.19	39.90
250 to 600	.18	54.00
600 to 1000	.16	120.00
Over 1000	.15	187.50

1/2" Service	.15	2" Service	.85
3/4" Service	.25	3" Service	1.75
1" Service	.35	4" Service	3.00
1 1/4" Service	.50	5" Service	3.00
1 1/2" Service	.65		

Alberta Labour Act  
Provincial Business Licencing  
City Business Licencing  
City permit required for all construction.

Residential:  
Land value - 100% of 75% of the 1957 value. Buildings assessed at 60% of 75% of the 1957 depreciated replacement value.

Business:  
For a business tax an assessment is made of any class or classes of business at a sum equal to the gross annual rental value of the premises, to this is applied a percentage levied by council, not to exceed 25 percent. The 1963 levy is 5% on all types of businesses.

Industrial:  
Industrial buildings are assessed at 60%

Red Deer River water:  
Total hardness untreated, summer, 130 ppm; winter, 200 ppm. Treatment reduces total hardness to approximately 100 ppm year round.

Commercial Water Rates - supplied on request.

Sample charges below:	
1000 cf per mo.	- \$3.45
1400 cf per mo.	- \$4.20
1800 cf per mo.	- \$5.40
2200 cf per mo.	- \$6.60
All over 2200 cf per mo.	at 30¢ per 100 cf.

Alberta Labour Act  
Provincial Business Licencing  
City Business Licencing  
City permit required for all construction.

Land is taxed at 100% of assessed value. Assessed values of land - from \$330 per front foot in prime commercial area to \$6.00 per front foot in fringe industrial areas. Improvements - Taxed at 60% of 1957 construction cost. 1957 costs are considered as 70% of present day cost. Tax formula 60% of 70% of construction cost at going mill rate.

1963 mill rate was 48  
Machinery and Equipment Tax:  
Applied to Industries with process machinery. Formula - 30% of 69% of value of machinery at going mill rate. Depreciated 5% per year per 10 years.



LLOYDMINSTER

Mean summer temperature is 53°F.  
Mean winter temperature is 13°F.  
Average rainfall is 12.4 inches.  
Average snowfall is 40.5 inches.  
Altitude is 2125 feet.

CAMROSE

Mean summer temperature is 53° F.  
Mean winter temperature is 18° F.  
Average rainfall is 12.1 inches.  
Average snowfall is 45.8 inches.  
Altitude is 2427 feet.

DRUMHELLER

Mean summer temperature is 57° F.  
Mean winter temperature is 18° F.  
Average rainfall is 9.86 inches.  
Average snowfall is 45.0 inches.  
Altitude is 2247 feet.





CALGARY

EDMONTON

XI CITY TAX STRUCTURE: (Continued)

XII CLIMATE:

Mean summer temperature is 59° F.  
Mean winter temperature is 17° F.  
Average rainfall is 11.97 inches.  
Average snowfall is 57.00 inches.  
Altitude is 3,439 feet.

Winter conditions modified by 'Chinook'  
winds which frequently raise tempera-  
tures by 30-40° F. in a few hours.

Mean summer temperature is 60° F.  
Mean winter temperature is 10° F.  
Average rainfall is 12.34 inches.  
Average snowfall is 52.9 inches.  
Altitude is 2,188 feet.

INDUSTRIAL LOCATION FACTORS - EIGHT ALBERTA CITIES (Continued)

LETHBRIDGE

MEDICINE HAT

RED DEER

of 75% of the depreciated 1957 replacement cost. Land is assessed at 100% of 75% of 1957 value. Machinery used in manufacturing or processing is assessed at 30% of depreciated value. (Where machinery used in manufacturing is subject to a property tax, no business tax is levied, however, Council may exempt from taxation all or part of the machinery assessment and apply a business tax.)

Business Tax:

Applied to all other industries.  
Formula -  $2\frac{1}{2}\%$  of  $\frac{1}{10}$  value of land and improvement.

Commercial Tax:

Applied to all commercial establishments. Formula -  $7\frac{1}{4}\%$  of true rental value.

Mean summer temperature is 62°F.  
Mean winter temperature is 19°F.  
Average rainfall is 10.74 inches.  
Average snowfall is 60.0 inches.  
Altitude is 2980 feet.

Mean summer temperature is 62°F.  
Mean winter temperature is 27.5°F.  
Average rainfall is 11.44 inches.  
Average snowfall is 35.6 inches.  
Altitude is 2185 feet.

Mean summer temperature is 59°F.  
Mean winter temperature is 9°F.  
Average rainfall is 15.74 inches.  
Average snowfall is 48.9 inches.  
Altitude is 2819 feet.

Winter conditions include "Chinook" winds which frequently raise temperatures by 30 - 40° in a few hours.

Medicine Hat has the longest frost free growing season of any locality in Alberta.





